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A STORY OF A HUNDRED YEARS

WESTERN AUSTRALIA
1829-1929

EDITED BY

SIR HAL COLEBATCH, C.M.G.

"There never was any great thing, except with time"

BY AUTHORITY
FRED. WM. SIMPSON, GOVERNMENT PRINTER
PERTH, W.A.

1929

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ACKNOWLEDGMENTS.

In compiling this story of our hundred years—

"Ragged, perchance, most faulty, incomplete,
Dropped stitches and frayed edges here and there,
Too much of this and not enough of that"—

I have received advice and assistance from many quarters only a small portion of which is it possible here to acknowledge. Dr. Battye's *History of Western Australia* has been an unfailing guide to historical fact; and the assistance of Mr. Paris, chief draughtsman of the Lands and Surveys Department, in the compilation of maps and charts has been invaluable. Miss M. Marshall, the Art Photo. Engravers and Messrs. Gibney & Sons, have provided excellent reproductions of portraits and photographs throughout the book. The tinted initial letters are the work of Miss Marshall. For the following chapters, in some cases partially and in others almost in their entirety, I am indebted to those mentioned: The Aborigines, Mr. A. O. Neville, Chief Protector of Aborigines; Floral Glory, Mrs. Emily H. Pelloe, who supplied both the letter-press and the very beautiful illustrations; A Fascinating Fauna, Mr. L. Glauert, Curator of the Museum; the Wealth of the Waters, Mr. F. Aldrich, the Chief Inspector of Fisheries; Giants of the Forest, Mr. S. L. Kessell, the Conservator of Forests; Mineral Resources, officials of the Mines Department; Wheat, Mr. G. L. Sutton, the Director of Agriculture; Dairying, Mr. P. G. Hampshire, the State Dairy Expert; Fruit, Mr. G. W. Wickens, the State Fruit Expert; Financing the Farmer, Mr. E. A. McLarty, Managing Trustee of the Agricultural Bank; Land Settlement, Mr. C. G. Morris, Under Secretary for Lands; Climatic Conditions, Mr. E. B. Curlewis, the Commonwealth Meteorologist; The University, Professor W. Murdoch, Professor of English; Illustrations to the University section, Mr. Rodney Alsop, F.R.I.B.A., of Melbourne; Fighting for the Empire, Colonel H. B. Collett, State President of the Returned Sailors' and Soldiers' League; The Sport of Kings, Mr. A. Gollan, Sporting Editor of the *Daily News*; Literature and Art, Dr. J. S. Battye, Litt. D., Public Librarian; Zoology and Acclimatation, Colonel E. A. LeSouef, the Curator of the Zoological Gardens; Fremantle Harbour, Mr. F. Stevens, Secretary to the Fremantle Trust; the Outports, Mr.

F. W. H. Stileman, State Engineer-in-Chief; Buildings and Builders, Mr. G. Temple Poole; and Facts and Figures, Mr. S. Bennett, the Government Statistician. The work of the Government Printing Office will speak for itself; the courtesy and enthusiastic co-operation of the Government Printer (Mr. F. W. Simpson) and his staff have been most helpful. Above all, my thanks are due to Mr. F. R. Mercer, the Government Publicity Officer, who from first to last has assisted me in every phase of the work.

Launching this tale on the turbulent sea of public criticism, I would employ, to Western Australian readers, the words of Aaron Watson:

> . . . . . Howso'er 'twere told,
> It must be smit across with golden gleams
> To eyes like yours; for, thinking of the past,
> Proud of the present, 'twere enough to say,
> "All these were of us; and all these; and those
> Who now are of us keep the flame alight
> That was lit up a hundred years ago."

THE EDITOR.

FOREWORD.

In arranging for the publication of a Centenary Book it was the desire of the Government that an outline of the progress of Western Australia in the first hundred years of its existence should be placed on permanent record, and that people outside the State should be afforded a convenient means of acquiring reliable information as to its present position and prospects.

The story of our hundred years cannot fail to be inspiring. Few colonising enterprises have been embarked upon in the face of greater natural difficulties—none has resulted in more complete success. Judged merely by the number of its population Western Australia has advanced less rapidly than some of the Australian States that were established at a later date ; but it has become the home of a happy and a prosperous people, full of love and patriotism for their country and of confidence in its resources.

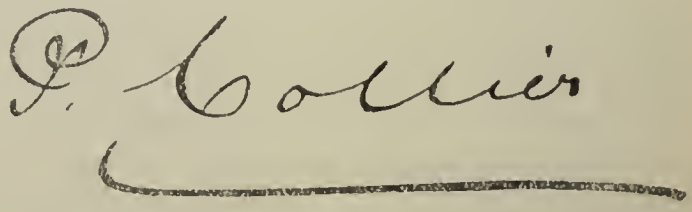
Wherever production from the soil forms the basis of national wealth, the well-being of the people is largely dependent upon climatic conditions, and it has been an important factor in recent expansion that over large areas the State enjoys an exceptionally reliable rainfall, its wheat lands being less subject to drought conditions than those of any other State in the Commonwealth.

Western Australia was the third colony on the island continent to be given a separate existence. In area it is much larger than any of the others, embracing nearly a million square miles of country or almost one-third of Australia. The task of developing this huge patrimony is a stupendous one for 412,000 people to attempt, but in a world rapidly becoming over-crowded, vacant territory capable of settlement is no mean asset. In its two extremities—the Kimberleys and the South-West corner—the State possesses vast areas, sparsely peopled, but rich in possibilities. To provide for their profitable occupation is a weighty responsibility, but by no means a burden. On the contrary it represents opportunities of which any other country in the world might well be envious.

In large measure the good fortune that has attended Western Australia is due to the enterprise, the courage, and the patient endurance of its first settlers. The present

generation owes a debt of gratitude to the pioneers of 1829, that can be partially acquitted by the faithful preservation of all remaining monuments of their struggles and achievements, whether they be documents or structures. The higher form of acknowledgment lies in demonstrating to the world a continuance of those virtues on which were laid the foundations of the State, and the practice of which will bring to it a greatness compared with which this century's growth is merely as a healthy child's first halting steps towards vigorous manhood.

On behalf of the Government I desire to thank all those who have assisted in the compilation of this work, particularly those whose names are recorded in the Editor's acknowledgments.



Premier's Office,
Perth, June 18, 1929.

A STORY OF A HUNDRED YEARS

THE FOUNDING OF WESTERN AUSTRALIA.

The Governor, Captain James Stirling, with his Staff at Rous Head, Fremantle, on June 18th, 1829. The figures from left to right are: First row: Commander W .T. Dance, R.N. (H.M.S. "Sulphur"), Captain Charles Howe Fremantle, R.N. (afterwards Admiral Sir Charles Fremantle, R.N., G.C.B.), and the Governor, Captain James Stirling, R.N. (afterwards Admiral Sir James Stirling). Second row: Captain Mark John Currie, R.N. (afterwards Admiral Currie), Lieut. George Griffin, O.C. Marines, H.M.S. "Challenger," and Captain F. C. Irvine (O.C. Detachment 63rd Regiment). Behind second row: John S. Roe (Surveyor General). Third row: a Lieutenant of Marines, Peter Brown (Colonial Secretary), and H. W. Reveley (Chief Engineer). Fourth row: William Stirling, Executive Council, and Dr. Charles Simmons, P.M.O. A detachment of the 63rd Regiment acted as a guard of honour for the ceremony of reading the Governor's Commission and issuing the official proclamation.

Lying in Gage Roads, the transport "Parmelia," 443 tons, is on the left; H.M.S. "Challenger," 28 guns, in the centre, and H.M.S. "Sulphur," 8 guns, on the right. In the back ground to the left is Garden Island, where the first camp was made and where the proclamation was read simultaneously with the reading at Rous Head.

The picture of which this is a copy, was painted by John Allcot, for Mr. Frederick William Allen, F.R.G.S., of Sydney. The artist made use of the original sketches of Garden Island and Rous Head made at the time of the landing by Mrs. M. Currie, wife of Captain M. J. Currie, these sketches being now in the possession of her grandson, Mr. Mark Reginald Macrea, of Sydney.

THE FIRST OF A GLORIOUS LINE.

Captain William Dampier, R.N., landing at Shark Bay, Western Australia, from H.M.S. "Roebuck," 290 tons, carrying ten guns and a crew of fifty, August 5, 1699. The first British warship to visit Australia. She sank at Island of Ascension on the voyage back to England, 23rd September, 1700.

Inset: CAPTAIN WILLIAM DAMPIER, R.N., born 1652, died 1715. Pirate, buccaneer, explorer, hydrographer, author, and naval officer. His first visit to Australia was in the "Cygnet" in 1688, when he entered and named Cygnet Bay (King Sound).

Painted by John Allcot, for Mr. Frederick William Allen, of Sydney, at the suggestion of and from historical data collected by Mr. D. Hope Johnston, M.A., F.R.G.S.

I: HISTORICAL BACKGROUND.

HIS is not a history. The fascinating tale of the discovery of the western coast of Terra Australis, records of the voyages of adventurous Portuguese, Dutch, French, and British navigators in the sixteenth, the seventeenth and the eighteenth centuries, and a comprehensive survey of the annexation of the territory and the foundation of the Colony in the third decade of the nineteenth century, may all be found in Dr. Battye's *History of Western Australia*. Here is attempted something quite different : a bird's eye view of a people's achievement during a hundred years ; a contrast between THEN and NOW ; a brief recital of pioneering difficulties and discouragements ; a record of continual growth in culture and material well-being ; a picture of present prosperity, of wide and varied opportunities for work, for advancement, for life, liberty and enjoyment ; a suggestion of possibilities for future greatness little dreamed of by those rare spirits who laid the foundations of a State in 1829.

History never repeats itself, but insofar as circumstances resemble those of by-gone times, like results are apt to follow. And there are close parallels between 1829 and 1929. A hundred years ago Europe was lying torn, bleeding and impoverished by the Napoleonic wars, and England was paying the price of victory. Thus the *Quarterly Review* of April, 1829 :—

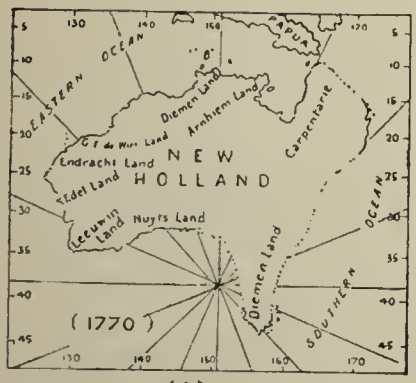
> Nations are wading deeper and deeper in an ocean of boundless debt. The interest of our debt now greatly exceeds the half of our whole annual income. . Another evil is our present redundancy of population. All trades, pursuits and professions are becoming more and more overstocked ; and multitudes of persons, of all degrees and ages, are moving about without employment, useless to themselves and a burden to the public. . In this strait the quantity of land suffered to lie uncultivated and

> waste in this Island and in Ireland, appears to us most extraordinary ; and no less so the small degree of public attention attracted to our colonies, which exceed in number and in value those which any State in the world ever before possessed. Hitherto we have derived from them little assistance, because the poor are sure of being maintained by their parishes at home, and the rich have been brought up too indulgently to sit down willingly as settlers in a new country. . . . One other disadvantage remains to be noted, and it is a serious one ; we allude to the extravagant notions and pretensions which the prosperity of the last thirty years has strengthened or engendered amongst us. So immense a stride was made during the war in agriculture, commerce and manufacture, and every class was suddenly raised so many degrees in affluence, comfort and consideration, that an universal persuasion at last prevailed, not only that this midsummer day of ease and contentment would always last, but that it would grow more glorious as it lengthened.

There is little in this to "date" it. What sub-editor, having it submitted to him as a commentary on the position of England to-day, would feel called upon to strike out a line, or even to amend a word? Then as now, and for substantially like reasons, it was to her colonies that the mother country looked for relief. The lessons of the American war of independence had sunk deeply into the official and the public mind. New methods were demanded. "The colonies of England," said the *Observer* of September 9, 1827, "as they have been hitherto managed, are millstones round the neck of the country. The system which considers each colony as a Government farm, upon which placemen may be turned out to pasture, has proved as ruinous to the colonists as it has been nefarious towards the mother country."

To-day large sections of the British press are urging emigration to the colonies and the Dominions. Similar articles were common in 1829. This is from one of them :—

> No pains should be spared to teach the labouring classes to regard the colonies as the land of promise, which it should be their highest ambition to be able to reach. Nor does this matter concern the poorer orders among us alone : in the colonies a large proportion of the children or grandchildren of the highest families in this land must be content to fix their abode unless they resolve to drag on a life of dependence and indigence here. It is unfortunate that these establishments should so long have been regarded as fit only for the residence of convicts, labourers, mechanics, and desperate or needy men.



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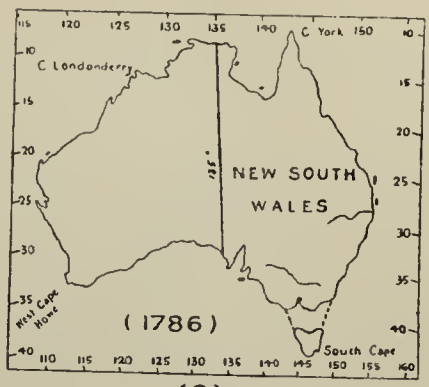

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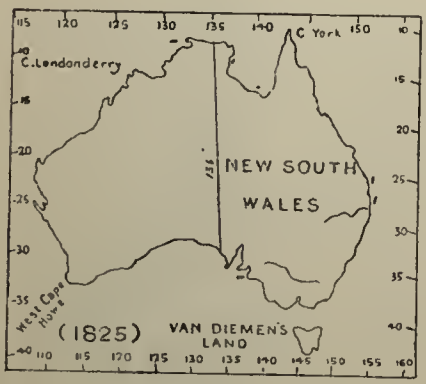

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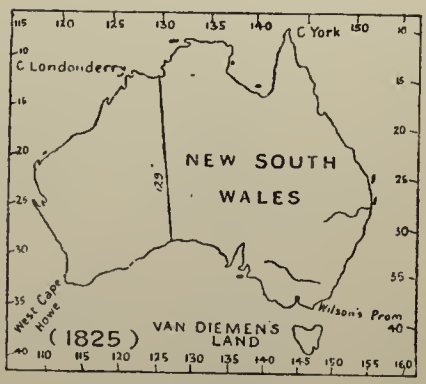

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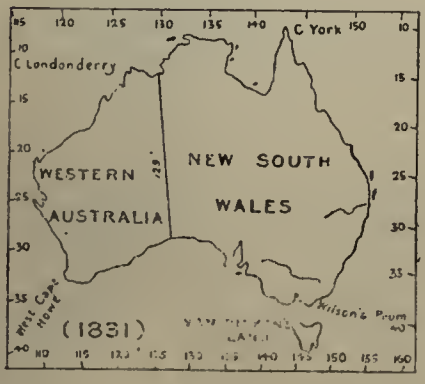

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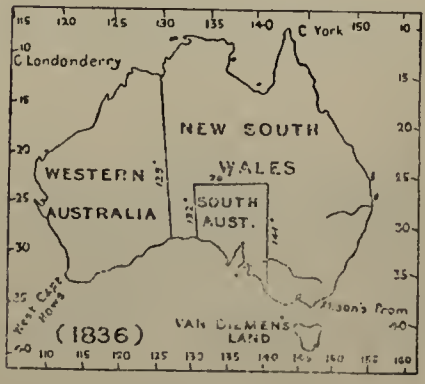

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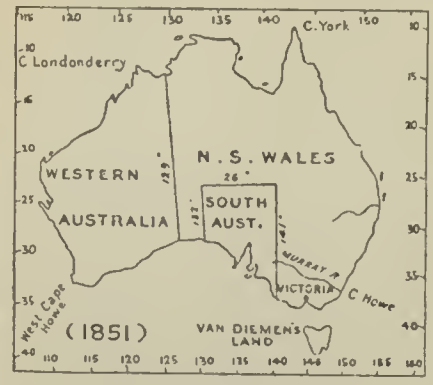
The maps in this series indicate the dates and the processes by which the continent of Australia has been brought to its present distribution of States and Territories. Map 1



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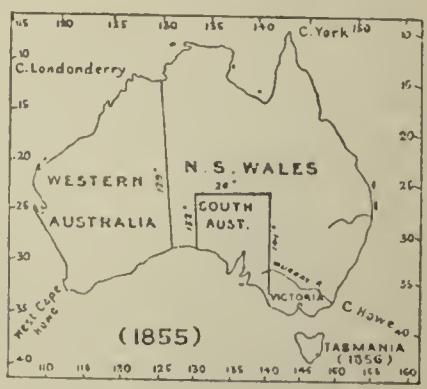

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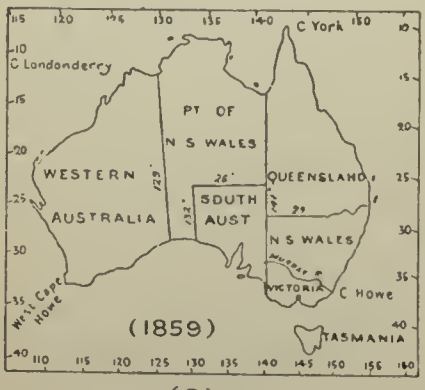

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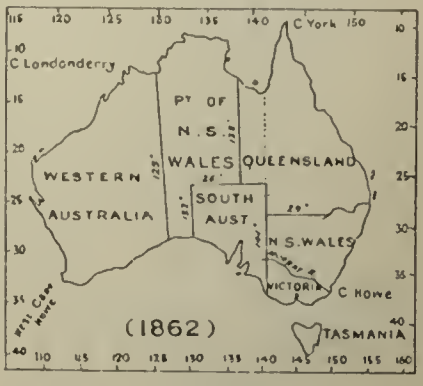

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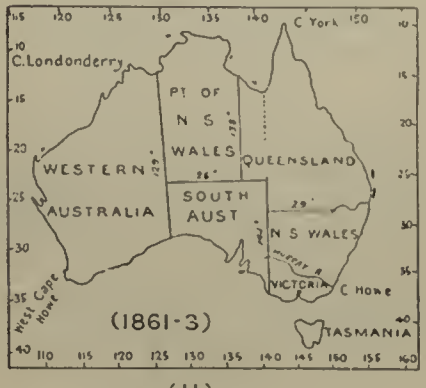

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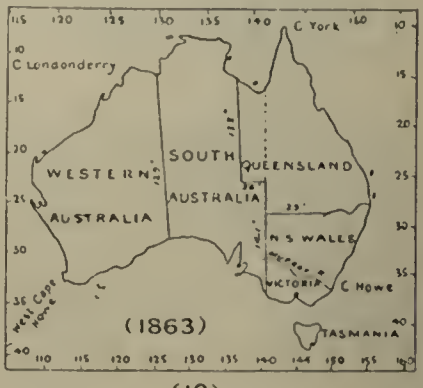

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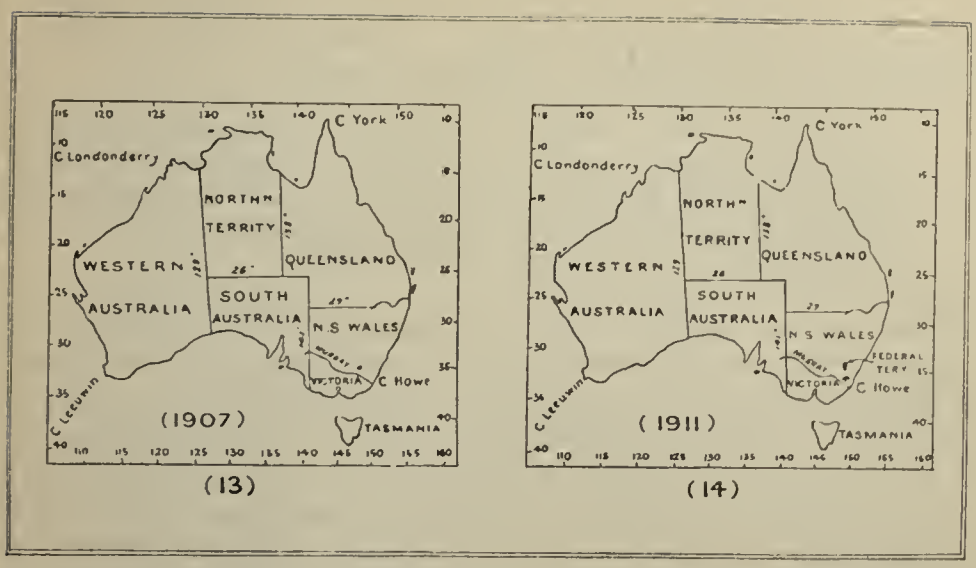
shows Australia as it was depicted before Captain Cook discovered the eastern coast in 1770, and map 2 marks the division into two parts made by Captain Arthur Phillip's com-



mission as Governor of New South Wales in 1786. Since then there have been no less than twelve alterations of boundaries. In 1798 Bass and Flinders established the insularity of Van Diemen's Land. and in 1825 (map 3) that portion of Australia was created a separate State. In the same year (map 4) the western boundary of New South Wales was extended to the 129th meridian in order to bring Melville Island, north of Port Darwin, within the jurisdiction. Although Western Australia was occupied by Major Lockyer in 1827 and the Swan River settlement was established in 1829, it was not until 1831 that the boundaries of the Colony were definitely described in Stirling's commission, (map 5). (A supplementary commission issued in 1873 included all the adjacent islands in the Indian Ocean.) South Australia was proclaimed a British Province by Letters Patent on the 28th December, 1836 (map 6), the South Australian Association having been formed two years before. In 1851 the territory previously known as Port Phillip was detached from New South Wales, under the name of Victoria (map 7), and four years later the boundaries of New South Wales were re-defined to include Lord Howe and other islands. In 1859 Queensland was severed from New South Wales (map 9), and in 1862 the western boundary of Queensland was extended to the 138th meridian of east longitude (map 10). In 1861 (map 11), the western boundary of South Australia was extended to the eastern boundary of Western Australia, and two years later (map 12) the Northern Territory was ceded by New South Wales to South Australia. In 1907 the Northern Territory was handed over to the Federal authority (map 13) and in 1911 (map 14) the New South Wales Parliament ceded to the Commonwealth the Federal Capital Territory of Canberra.

It was on this sea of public thought that the project of settling the western coast of New Holland was launched by Captain Stirling, who had examined a portion of the country in 1827. Towards the end of 1828—aided "by false rumours that had reached the Government of the intentions of a foreign power to establish a settlement on the west coast of Australia"—Captain Stirling after long endeavour had persuaded the home authorities to "form a small settlement in that quarter," not so much, it must be confessed, in anticipation of advantage, as from a desire

to keep any other country out. General Darling writing from Sydney in October, 1826, had said—

> It will not be easy to satisfy the French, if they are desirous of establishing themselves here, that there is any objection to their doing so on the west coast, and I therefore beg to suggest that the difficulty would be removed by a commission describing the whole territory as within the Government.

This advice had not been followed, but it is interesting to recall the process by which the present eastern boundary of Western Australia was fixed. Prior to 1825 the western boundary of New South Wales was the 135th meridian of East longitude—running straight down the centre of what is now South Australia. In order to test the possibilities of the islands to the north of Australia, and in pursuit of the policy of occupation of territory that others might feel disposed to claim, a party of convicts was transferred from Sydney to Melville Island, to the north-west of Port Darwin. After they had taken their departure from Sydney it was found that Melville Island was to the westward of the western boundary of New South Wales, and therefore outside the jurisdiction of Governor Darling. Another straight line was drawn down the 129th meridian of East longitude and the western boundary of New South Wales was extended thereto. Thus the eastern boundary of Western Australia was determined in order to give Governor Darling, in Sydney, authority over a few convicts temporarily stationed at Melville Island.

On December 5, 1828, a circular was issued from Downing Street setting forth the terms on which the Government was prepared to assist in the establishment of the Colony. These were amended by regulations issued on January 13, 1829, of which the following is a digest :—

> 1. His Majesty's Government do not intend to incur any expense in conveying settlers to the New Colony on the Swan River ; and will not feel bound to defray the expense of supplying them with provisions, or other necessaries, after their arrival there, nor to assist their removal to England, or elsewhere, should they be desirous of quitting the colony.
>
> 2. Such persons as may arrive in that settlement before the end of the year 1830 will receive, in the order of their arrival, grants of land, free of quit rent, proportioned to the capital which

they may be prepared to invest in the improvement of the land, at the rate of forty acres for every sum of three pounds which they may be prepared to invest.

3. Under the head of investment of capital will be considered stock of every description, all implements of husbandry, and other articles which may be applied to the purposes of productive industry or which may be necessary, for the establishment of the settler on the land where he is to be located. The amount of any half-pay or pensions which the applicant may receive from the Government, will also be considered as so much capital.

4. Those who may incur the expense of taking out labouring persons, will be entitled to an allowance of land at the rate of fifteen pounds, that is of two hundred acres of land, for the passage of every such labouring person, over and above any other investment of capital. In the class of "labouring persons" are included women, and children above ten years old. Provision will be made by law, at the earliest opportunity, for rendering those capitalists, who may be engaged in taking out labouring persons to this settlement, liable for the future maintenance of those persons, should they, from infirmity or any other cause, become unable to maintain themselves there.

5. The license of occupation of land will be granted to the settler, on satisfactory proof being exhibited to the Lieutenant Governor (or other officer administering the Local Government) of the amount of property brought into the Colony. The proofs required of such property will be such satisfactory vouchers of expenses as would be received in auditing public accounts. But the full title of the land will not be granted in fee simple, until the settler has proved, to the satisfaction of the Lieutenant Governor (or other officer administering the Local Government) that the sum required by Article 2 of these regulations (viz., one shilling and sixpence per acre) has been expended in the cultivation of the land, or in solid improvements, such as buildings, roads, or other works of the kind.

6. Any grant of land thus allotted, of which a fair proportion, of at least one-fourth, shall not have been brought into cultivation, otherwise improved or reclaimed from its wild state, to the extent of one shilling and sixpence per acre, to the satisfaction of the Local Government, within three years from the date of the license of occupation, shall, at the end of the three years, be liable to a payment of sixpence per acre, into the public chest of the settlement; and, at the expiration of seven years more, should the land still remain in an uncultivated or unimproved state, it will revert absolutely to the Crown.

7. After the year 1830, land will be disposed of to those settlers who may resort to the Colony, on such conditions as His Majesty's Government may see occasion to adopt.

8. It is not intended that any convicts, or other description of prisoners, be transported to this new settlement.

Henley Park
Swan River
Fraser
Melville Water
Canning
River
Min. Spring
Rottenest I.
Pulo Carnac
Cockburn Sound
Mangles Bay
General Darling's
Fine undulating grass plains thinly wooded.
Cape Bouvard
Range of Mountains 1200 to 1500 feet high.
Port Leschenault
Bayo du Geographe
Riv. Vasse
C Clairault
Cape Naturaliste
C. Mentelle
Pt Freycinet
C Hamelin
Cape Leeuwin
I St Alvarn
Sketch of the NEW SETTLEMENT on SWAN RIVER.
East from Greenwich

9. The Government will be administered by Captain Stirling, of the Royal Navy, as Lieutenant Governor of the settlement; and it is proposed that a Bill should be submitted to Parliament, in the course of the next session, to make provision for the civil Government of the new settlement.—Downing Street, 13th January, 1829.

To these regulations, and the offer of free land contained in them, the widest publicity was given. A striking and most comprehensive article, extending over thirty pages of small type, appeared in the *Quarterly Review* of April, 1829. Because of the circumstances prevailing in England the project was warmly welcomed.

> This intended new settlement is one which bids fair in process of time to vie with the other Australian colonies in wealth and population; possessing the additional advantage, of a more select and moral society, which the regulations provide for . . . . . The intended settlement is designated in the regulations as "The New Colony on the River Swan" but this is a name we think not sufficiently comprehensive for the extent of territory meant to be occupied. . . . This territory between the sea coast and a range of mountains parallel to it may be estimated to contain from five to six millions of acres, the greater part of which, from the general appearance of the two extreme portions, may be considered as land fit for the plough, and, therefore, fully capable of giving support to a million souls.

There followed lengthy extracts from the reports of Captain Stirling and Mr. Fraser, the botanist who had accompanied him in his examination, and with the article was published the sketch plan reproduced herewith. One extract from Mr. Fraser's report is worth quoting:—

> In giving my opinion of the land seen on the banks of the Swan River, I hesitate not in pronouncing it superior to any I ever saw in New South Wales, east of the Blue Mountains, not only in its local character, but in the many existing advantages which it holds out to settlers. These advantages I consider to be—
>
> First, the evident superiority of the soil.
>
> Secondly, the facility with which a settler can bring his farm into a state of immediate culture, in consequence of the open state of the country, which allows not a greater average than two trees to an acre.
>
> Thirdly, the general abundance of springs, producing water of the best quality, and the consequent permanent humidity of the soil, two advantages not existent on the eastern coast; and
>
> Fourthly, the advantages of water carriage to his door, and the non-existence of impediments to land carriage.

In view of the troubles experienced by even early arrivals in obtaining grants of land, the very definite character of the assurance conveyed to intending settlers is noteworthy.

> The plan on which the Colony is to be founded is in our opinion unobjectionable. It promises the most advantageous terms to qualified settlers, and deserves only to be known to ensure as many of the most respectable agriculturists as may in the first instance be desirable. We think, however, that a maximum should be fixed on the quantity of land to be granted to any individual, or association of individuals, and a reservation made of certain land for the site of towns and their environs.

Regarding climate the *Review* indulged in a comparison which experience has fully justified :

> In point of climate these two colonies (New South Wales and the Swan River settlement) may perhaps be equally salubrious, though we are disposed to think that the western aspect and the sea breezes may preponderate in favour of the new one—this being, probably, milder, as the western sides of all continents and large islands are, than the eastern sides in winter—while the refreshing breezes cool the air in the summer.

Another advantage, of which even to-day the State is not reaping the full benefit, was emphasised :

> In geographical position it has an incalculable advantage over New South Wales. In the first place it is not only much more conveniently situated than that colony, but is much nearer to and has much easier means of communication with, every part of the civilised world, the west coast of America perhaps excepted.

There was some diversity of comment as to the class of people who should be encouraged to migrate to the new settlement. The *Times*, in reviewing the regulations for the acquiring of land, said : "It is obvious, from the terms held out to the colonists, that none but men of some capital are wished for by the King's government as undertakers of the projected enterprise." On the other hand the *Hampshire Telegraph* and other provincial papers expressed regret that the Government had not been more liberal in affording facilities to such industrious labourers as might desire to emigrate.

> The conditions, however, are such as ought to be acceptable to parishes ; they will be enabled by them to send their willing and able agricultural paupers comfortably out to the settlement, where £15 will purchase them the freehold of two hundred acres of land. By a recent Act of Parliament parishes have the power to mortgage their rates for the purpose of raising funds for such beneficial expatriation.

Two outstanding advantages of the proposed new settlement were emphasised in all the papers of the period: The first, that no convicts or other description of prisoners were ever to be sent there; and the second, that "every man of known good character and industry will have conveyed to him and his heirs for ever a grant of land which he may hold and enjoy without dreading the calls of the tax-gatherer or landlord." Even in the establishment of a new country things do not always work out according to plan! Conflicting reports as to the quality of the land, and the general conditions of the country from the point of view of settlement, may have caused some hesitation, but the general condemnation bestowed upon the whole west coast of New Holland by the French expedition under Baudin in 1800 was overborne by the specific and confident opinions of Stirling and Fraser.

Above all it was the Imperial aspect of the project that appealed to British statesmen, and stirred the imagination of the people. Notwithstanding the loss of America, colonisation remained the policy of England: "Whatever may be the fate of the several British colonies at some future and distant period, it is something at least to have spread our laws and language and moral character over the most distant parts of the globe. The colonies that speak the language of old England will always be her best customers. Let England plant her standard on every unoccupied spot, if insular so much the better, of the habitable globe. The expense is trifling when compared with the inestimable advantages which will one day result to her from these outstretched members of her little body." The danger likely to result to other British possessions from the occupation of the western coast of Australia by France, was ever in the public mind. Thus the *Observer* in November, 1828:—

> The "Ariadne" of 28 guns, which is at Plymouth, is said to be destined to proceed to the intended new settlement on the west coast of New South Wales. There was a rumour current that the French Government have recently applied to the Government of this country for permission to establish a colony on some part of that immense island, in which the latter have refused to acquiesce, and that upon such refusal being communicated, a confession was made by the Ministry of France that the means to colonise had already left a French port, but in what part of

Australia it was intended to establish the Colony we have not learned. It is understood also that it has been since intimated that part of Admiral Roupin's squadron, lately at Rio de Janeiro (and he has four large store ships with him), was destined for the same quarter on quitting the Brazils.

Taken from a book entitled *A Picture of Australia*, published in London in 1829.

A couple of months later the same journal was responsible for this rather curious comment—

> The spot of our intended settlement was unknown to us until surveyed by the French navigator, Freycinet. A French settlement, it is imagined, is already located there; if this be the case we have no right to disturb them.

Not many years before, Talleyrand had designated England's colonies as the "sheet-anchor of Great Britain—the prop that supports her maritime superiority—the strongholds of her power. Deprive her of her colonies and you break down her last wall; you fill up her last ditch." Verily, the destiny of Western Australia as a British Colony was first determined on the field of Waterloo, and just one hundred years after that "King-making victory" Western Australian soldiers, on almost the same field of combat, were demonstrating to the world that Britain's colonies were still "the strongholds of her power."

CAPTAIN JAMES STIRLING

Captain James Stirling, Founder and first Governor of Western Australia. Born Lanarkshire, 1791; Governor of Western Australia, 1829 to 1838; Rear Admiral, 1851; Vice-Admiral, 1862; died April 22, 1865.

During a visit to England in 1833, the accompanying portrait of Captain Stirling was painted by Sir William Beechey. The cup shown in the portrait is the Swan Cup, on which is inscribed: "Presented to Captain James Stirling, R.N., first Governor of Western Australia, by the relatives and friends of the settlers at Swan River in testimony of their admiration of the wisdom, decision, and kindness uniformly displayed by him, and of their gratitude for his strenuous exertions with the Colonial Department for the benefit of that settlement. London, May, 1833." The cup remained in the possession of his descendants until 1926, when it was presented by Mrs. Cooper (wife of General Cooper) and Lieut.-Col. Richard Stirling Grant Thorold, D.S.O., grandchildren of Sir James Stirling, through the Premier, Mr. P. Collier—who was then on a visit to England—to the people of Western Australia. It is now in the Perth Museum.

II: VOYAGE OUT AND LANDING

APTAIN STIRLING'S selection as leader of the enterprise was the only course possible in the circumstances. It was his responsibility. He was the one man acquainted with the conditions that would confront the settlers, it was his reports that had induced the authorities to embark upon the undertaking, and his opinions furnished the material on which the appeal to intending emigrants was made. He was a man of distinguished antecedents and proud personal record. Born in 1791, he was the fifth son of Andrew Stirling, of Drumpellier, Lanarkshire, Scotland. Following the precedents of a family famous in the naval annals of the period, he entered the navy when only 12 years of age and whilst still a boy saw active service in the West Indies, in the engagement off Cape Finisterre, and at the fall of Monte Video. In 1809 he obtained his commission as a lieutenant and three years later was appointed Flag Lieutenant to his uncle, Vice-Admiral Sir Charles Stirling.

In 1812, at 21 years of age, Stirling was elevated to the rank of Commander and appointed to the "Brazen," sloop of twenty-eight guns. In that year he rendered distinguished service in the American war, obtaining from the Commander-in-Chief the highest praise for his zeal and alacrity. He was elevated to post rank in 1818, and five years later married Ellen, the third daughter of James Mangles, of Woodbridge, Guildford, High Sheriff of Surrey and subsequently M.P. for Guildford (Surrey). In January, 1826, he was sent on the "Success" to form a new settlement in Raffles Bay, Coburg Peninsula. For this work he was highly commended by the Governor of New South Wales, who next sent him on the same vessel to visit and report upon the country in the vicinity of the Swan River. He then returned to England, relinquishing the command of the "Success."

Co-operating with Captain Stirling in the original project to form a settlement at Swan River was Major Moody, of the Royal Engineers. Their intention was the establishment of an association for the purpose of colonization, and they were assured of substantial backing by people of wealth and influence. In a letter to the Colonial Office, under date August 21, 1828, they asked if such an association could secure a proprietary charter similar to those granted in Pennsylvania and Georgia. The Imperial Government refused to consider such a proposal, on the ground that it was deemed desirable to exercise a more immediate control by Government.

Captain Stirling was asked to make further inquiries as to the prospects of the suggested association, and on October 22 he again communicated with the authorities, pointing out certain objections to the enterprise. These, in the main, were that there was no intimation as to the precise intentions of the Government; that no preparations had been made for the reception of settlers; that His Majesty's right to the country had never been declared; and that an expedition there might find the best positions occupied by the French. To overcome the major portion of these difficulties he suggested the immediate despatch of a ship of war, so that possession might be taken of the country, surveys commenced and arrangements made for the reception of settlers. The suggestion was at once acted upon, but subsequent events indicate that prior to the arrival of the settlers little was done in the way of making surveys or preparing for their reception.

It was at first intended to despatch H.M.S. "Tweed" from the Cape of Good Hope, but this order was cancelled, and in December, 1828, the "Challenger," under Captain Fremantle, left London, reaching the Cape in March and Cockburn Sound on April 27, 1829. Before the "Challenger" left England further arrangements were finalised. The Admiralty was asked to provide a ship for the conveyance of troops and settlers. On December 28, Captain Stirling was personally advised that he was to be given command of the new settlement, and his official appointment was made two days later. Conditions of settlement were prepared and these followed to some extent the

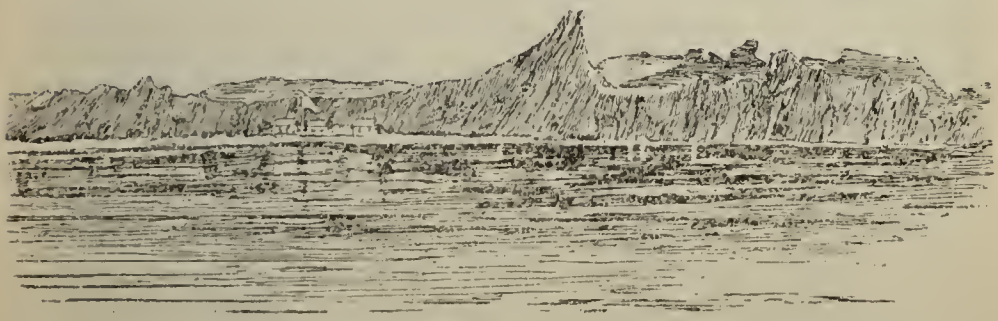
suggestions made by the association, or syndicate, on whose behalf Captain Stirling and Major Moody made their first proposals to the Government. The leading members of this syndicate were Mr. Thomas Peel, a relative of Sir Robert, Sir Francis Vincent, Mr. E. W. H. Schenley, and Colonel T. Potter Macqueen.

It is idle to speculate as to whether the progress of the Colony in its early years would have been more or less satisfactory had the ideas of the syndicate been given full effect. They undertook to send out some 10,000 settlers, and large quantities of stock ; to carry out surveys and to arrange a suitable service between Sydney and Swan River. Their first objectives were the cultivation of cotton, tobacco, sugar, flax, and various drugs, and the rearing of horses for the Indian trade. The general effect of the alterations made by the Government in the syndicate's proposals was to make the project less the undertaking of an individual company and more a public enterprise, open to all persons desirous of participating in it, and under the complete authority of the Government itself.

The next steps were the chartering of the " Parmelia," 443 tons, Captain J. H. Luscombe, to convey the officials, their families, and supplies ; and the commissioning of H.M.S. " Sulphur " to carry a detachment of the 63rd Regiment, under the command of Captain F. C. Irwin. On February 6, 1829, the " Parmelia " left Spithead. On the 8th she reached Plymouth, the following day she was joined by the " Sulphur," and the two vessels set out on their great adventure. Table Bay was reached without incident at the end of April, and the two vessels remained there about a fortnight whilst minor repairs were made to the " Sulphur." During this stay the first mishap of the voyage occurred, Dr. Daly (the Assistant Surgeon) and his eldest daughter being drowned whilst returning from the shore to the ship. His widow, with her four remaining children—aged from 6 years to 2 months—continued the voyage. Leaving the Cape on the last day of April the " Parmelia " drew away from the " Sulphur."

Captain Stirling was anxious to reach the Swan River before the wet season commenced. He had in mind the

fact that his own departure so soon after that of the "Challenger" would leave little opportunity for much to be done in the way of preparation for the settlers, and so set about the building up of an organisation of government that should be ready to function directly the promised land was reached. On May 16 he issued a document constituting a "Board of Counsel and Audit in the management of the property of the Crown and of public property within the settlement," the members being: Commander (afterwards Admiral) Mark John Currie, R.N., Lieutenant Roe



Stirling's landing place: Careening Bay, southern end of Garden Island.

and Mr. William Stirling, a nephew of the Governor. One of the chief duties of this board was to value the property and stock brought by the colonists in order that land might be allotted to them in accordance with the regulations. Mr. James Drummond was appointed superintendent of Government gardens and farms; Mr. G. W. Mangles, superintendent of Government stock; Mr. H. W. Reveley, Civil Engineer; Mr. William Stirling, Registrar; and Mr. H. C. Sutherland, Assistant Surveyor. These appointments at the outset were honorary. With the exception of that of Mr. William Stirling they were subsequently confirmed, and salaries of a modest character were allotted in most cases. Mr. Drummond and Mr. Mangles, however, continued to perform their duties without remuneration.

On May 31 land was sighted, and the following day the vessel moved towards an anchorage in Cockburn Sound. Grounding on a bank between Carnac Island and the mainland, she sustained considerable damage, and was refloated only after great exertions on the part of the crew of the "Challenger." That vessel had arrived only a month earlier, so that there had been little opportunity

to make preparation for the arrival of the settlers. Winter had commenced and the weather being stormy it was decided to land on Buache Island, which Captain Stirling on a previous visit had renamed Garden Island. The "Sulphur" arrived on June 8 and on the 16th her detachment disembarked on the mainland and relieved the crew of the "Challenger," who had been protecting the flag since it was hoisted by Captain Fremantle on his arrival.

It was not until the 18th of the month that Captain Stirling landed with a party at Rous Head, and formally published there and at Garden Island the proclamation constituting His Majesty's settlement in Western Australia. By that proclamation all male persons whatsoever between the ages of 15 and 50 were required to enrol themselves in the militia, and to observe appointed days for muster and exercise under penalty of fine or imprisonment. Because of rough weather and the difficulty of communication between the island and the mainland temporary buildings were erected on Garden Island for the accommodation of the settlers and the protection of the stores. A small patch of land was cleared and the seeds brought from England were planted. In July exploratory work of the land near the Swan river was commenced by Commander Currie, whilst Lieutenant Henry, of the "Challenger," proceeded along the Canning River and examined much of the country between the mouth of the river and the ranges. In the same month the sites for the towns of Fremantle and Perth were selected, the former being named after the Captain of the "Challenger" and the latter out of compliment to

the then Secretary of State for the Colonies who sat in the House of Commons as member for Perth in Scotland. The first stone of the new town of Perth was laid on the allotment set apart for military barracks on August 12th, the anniversary of the birthday of King George IV.

View of Fremantle, first published in London on September 20, 1832. The figures indicate: 1. Rottnest Island. 2. The Stragglers Rocks. 3. Mewstone Rocks. 4. Rous Head. 5. Channel over the Bar. 6. Arthur's Head, and Jail.. 7. Signal Flag Staff. 8. Harbour Master's Office. 9. Wreck of the Marquis of Anglesea. 10. Schooner Ellen. 11. The Schooner Egyptian. 12. McDermott's Store. 13. G. Leake's House. 14. Shenton's mill and brick house. 15. Stirling Hotel. 16. Harbour Master's House. 17. Dr. Harrison's House. 18. Post Office. 19. Mr. Dod's House. Rous Head, where the proclamation was read, is the projecting point on the right of the picture. Capt. Fremantle, of the "Challenger," on May 2, had hoisted the British Flag on Arthur's Head, the South head—marked 6 in the illustration above.

Mrs. Currie's picture of Garden Island.

Of the hardships and disappointments experienced by the "Parmelia" passengers after their landing at Garden Island, and whilst waiting for accommodation on the mainland and for the allotment of their holdings, there are many records, all indicating that these initial difficulties were

faced with fortitude and confidence. The few diaries extant refer chiefly to pleasant little social functions. After the lapse of a hundred years it is interesting to reproduce the passenger list of the 443-ton sailing ship that brought out the founders of the Colony :—

Names.	Designation.	Ages of Children.
Captain Stirling, R.N.	Lieut.-Governor	....
Mrs. Ellen Stirling	his wife	....
Andrew Stirling	their son	3 years
Frederick H. Stirling	do.	4 months
William Stirling	his nephew	....
George Mangles	Stock Superintendent	....
George Eliot	....	11 years
Thomas Blakey	....	....
Sarah Blakey	....	....
John Kelly	....	....
Elizabeth Kelly	....	....
Mr. P. Brown (afterwards Broun)	Colonial Secretary	....
Mrs. Caroline Brown	his wife	....
MacBride Brown	their son	2 years
Ann Brown	their daughter	6 months
Richard Evans	....	....
Margaret McLeod	....	....
Mary Ann Smith	....	....
Mr. James Morgan	Storekeeper	....
Mrs. Rebecca Morgan	his wife	....
James Morgan	their son	11 years
Rebecca Morgan	their daughter	12 ,,
Ann Shipsey	....	....
Patrick Murphy	....	....
Commander M. J. Currie, R.N.	Harbourmaster	....
Mrs. Jane Currie	his wife	....
Frederick Ludlow	....	....
Mildred Kitts Ludlow	....	....
Jane Fruin	....	....
Mr. John S. Roe	Surveyor	....
Mrs. Matilda Roe	his wife	....
Charles D. Wright	....	....
Mr. Henry C. Sutherland	Assistant Surveyor	....
Mrs. Ann Sutherland	his wife	....
Mr. W. Shelton	Clerk to Colonial Secretary	....

Names.	Designation.	Ages of Children.
Mr. James Drummond	Superintendent of Gardens	....
Mrs. Sarah Drummond	his wife	....
Thomas Drummond	their son	18 years
Jane Drummond	their daughter	16 ,,
James Drummond	their son	15 ,,
John Drummond	do.	13 ,,
Johnson Drummond	do.	9 ,,
Euphemia Drummond	their daughter	3 ,,
Elizabeth Gamble	....	....
Mr. Charles Simmons	Surgeon	....
Mrs. Jane Daly	Widow of Assistant Surgeon drowned at Cape Town	....
Joseph R. Daly	her son	6 years
Henry John Daly	do.	4 ,,
Edward N. Daly	do.	2 ,,
Eliza Rose Daly	her daughter	2 months
Jas. Elliott	....	....
Alexander Fendam	Cooper	....
Mary Fendam	his wife	....
William Hoking	Artificer	....
Mary Hoking	his wife	....
Jno. Hoking	their son	14 years
William Hoking	do.	12 ,,
Mary Hoking	their daughter	10 ,,
Thos. Hoking	their son	8 ,,
David Hoking	do.	6 ,,
Charles Hoking	do.	2 ,,
Thos. Davis	Smith	....
Catherine Davis	his wife	....
Jno. Davis	their son	3 years
Charlotte Davis	their daughter	2 ,,
John Davis	their nephew	13 ,,
James C. Smith	Boat builder	....
Sarah Smith	his wife	....
Mr. H. W. Reveley	Civil Engineer	....
Mrs. Amelia Reveley	his wife	....

III: RECORDS OF 1829

THE records kept by Captain Stirling in the early years of the Colony were commendably complete. On the 20th of January, 1830, he forwarded to Sir George Murray, the Secretary of State for the Colonies, a dispatch containing exhaustive information relative to the progress of the settlement. First he related the laying out of the two towns, Fremantle and Perth, in which the allotments were speedily occupied by the first settlers, the more diligent among whom at once commenced the erection of temporary buildings. Then as now the chief difficulty of the administration was to find land for those who wanted it.

> "On the 1st of October I found it necessary to open a district of country for location. In the first instance I selected for that purpose the banks of the Swan River; and being urged by further applications for land, on the 2nd November I threw open the country extending between the sea and the mountains fifty miles southward from Perth, including the district originally reserved for Mr. Thomas Peel. In these districts the first comers found suitable locations, and acting under the impulse of novelty there were many who at once established themselves on their lands, regardless of danger from the natives, and of the difficulty they encountered in removing their goods from the coast. This adventurous and laudable spirit, which it was politic to encourage, I am happy in saying met with no check, and single individuals have traversed the country freely at great distances from the towns, hitherto without interruption or injury. In the course of October, November, and December some ships and many settlers came in. Their arrival before the country could be properly surveyed occasioned great inconvenience. Viewing no evil so great to the settler as delay in assigning to him his land, I was accordingly forced to grant to him locations on unsurveyed lands, and to determine the site of towns without experience of their merits."

The establishment of a magistracy and a body of constables is also recorded, as well as the erection of a decent place of worship, of which the Lieutenant-Governor says:

"To the zeal and energy of the venerable Archdeacon Scott, who is still here, on his passage to England, I owe the furtherance of these objects."

An abstract from the return conveys in concise form the actual achievements of 1829:—

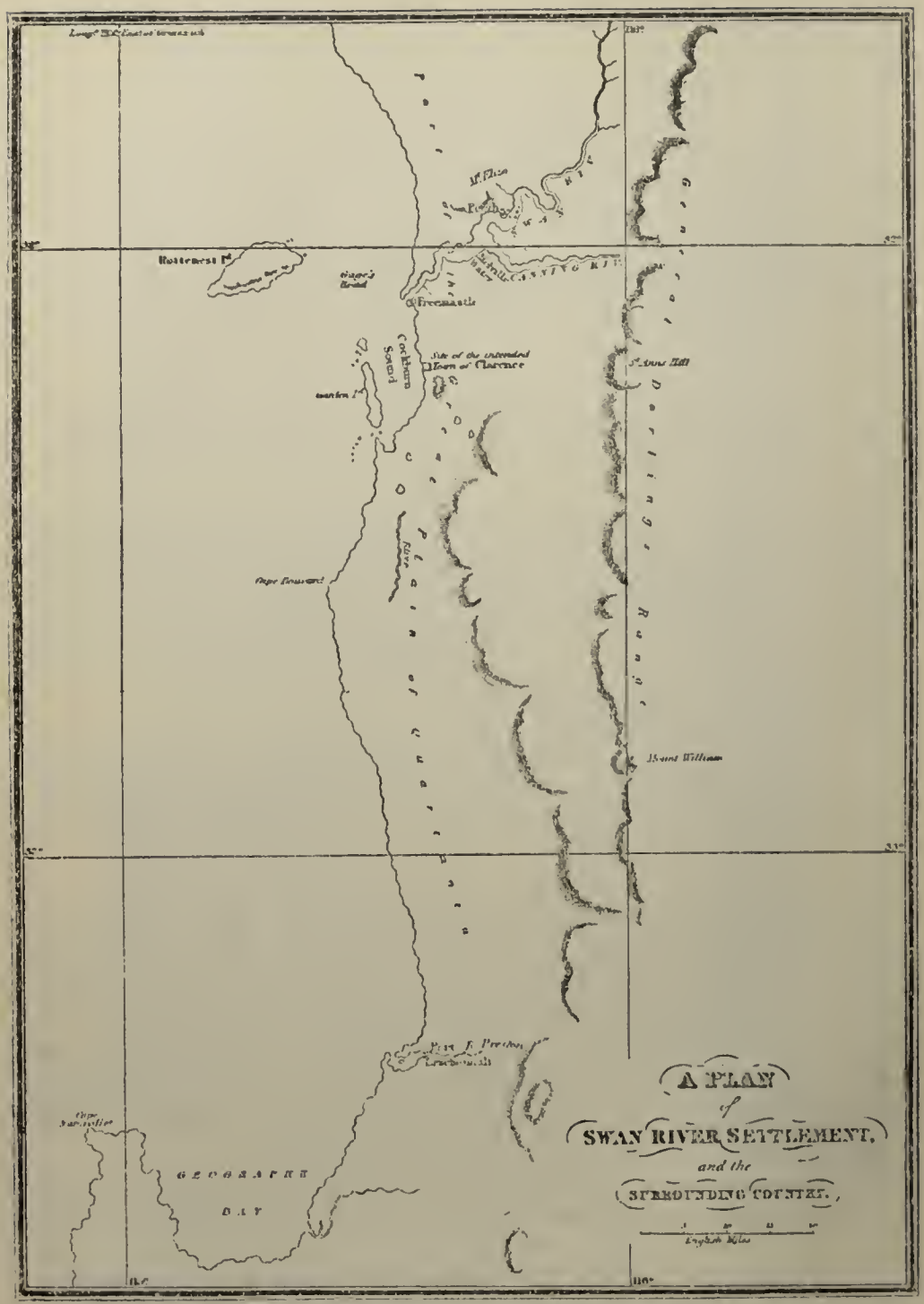
Ships arrived.	Persons Resident.	Persons in Settlement not resident.	Amounts of claim to land.	Lands allotted.	Locations actually effected.	Cattle.	Horses.	Sheep.	Hogs.
			£	acres.					
25	850	440	41,550	525,000	39	204	57	1,096	106

Explorations effected at the instance of the Government and by private individuals during 1829 covered the coastal lands for a distance of seventy miles north of Rottnest and ninety miles south of it. The land near the coast to the northward was represented as indifferent, that to the south was reported to be good.

> With the country between the sea coast and the hills ten leagues to the north and the south of Perth, we are well acquainted; and three or four parties having severally penetrated the hilly district beyond the first range, to the extent of twenty miles, we possess some information relative to its soil and products.

A document forwarded to the Colonial Office with the first dispatch was the survey of Cockburn Sound by the Chief Surveyor, Mr. Roe, and of which Governor Stirling wrote: "On its accuracy the most perfect reliance may be placed, as it has been effected and lately completed by the most unswerving and skilful application." The Governor wrote with engaging frankness regarding the quality of the persons who had come to the settlement:—

> Among the heads of families there is a great majority of highly respectable and independent persons. In the working class there is a great variety; some masters have been careful in their selection of servants and workmen, but the greater part have either engaged the outcasts of parishes, or have brought out men without reference to character, and the consequence is great inconvenience to such masters and endless trouble to the authorities.



PLAN OF SWAN RIVER SETTLEMENT.

From *Powell's Narrative of a Voyage to the Swan River*, published 1831. Note the prominence given to the townsite of Clarence, soon abandoned, and the name "Great Plains of Quartania," long since fallen into disuse.

Already by the end of 1829 regular buildings were succeeding to the earlier temporary structures in Perth and Fremantle, and the Governor had in contemplation the establishment of three additional towns: "One on the shore of Cockburn Sound; one about ten miles higher than Perth on the Swan River; and a third on the Murray

Perth, the Seat of Government, 1829.
Long building, Church and School; in centre foreground, Government House; to right, Government Offices.

River, twenty-five miles to the southward." The nature and the weight of the anxieties that preyed upon the Governor's mind during the first six months after his arrival may be gathered from the following paragraph:—

> Among so many settlers there could not be a great number with minds and bodies suited to encounter the struggles and distresses of a new settlement; many, if not all, have accordingly been more or less disappointed on arrival, either with the state of things here, or their own want of power to surmount the difficulties pressing around them. This has been experienced in the beginning of every new colony, and might have been expected to occur here as elsewhere. From this depression, however, the active and the stout-hearted have now recovered; and ten or twelve of the leading men of the settlement having occupied their grounds, and having declared themselves fully satisfied with the quality of the soil and the condition of their cattle, I consider the undertaking is now safe from the effects of a general despondency which at one time threatened to defeat the views of His Majesty's Government in this quarter.

The live stock brought out by the first settlers was generally of the best quality, and with very few exceptions

all kinds did well. Towards the close of the dry season (January 20, 1830), the bullocks and sheep continued to fatten on the natural grasses, and whilst horses from England had not prospered so well they had maintained themselves without any food but the native herbage. The building of houses and boats, the examination of the country, and the transport of goods from the shore to their allotments had occupied the attention of the settlers until the ground became too dry and hard for agriculture and gardening. With reference to grazing the dispatch says :—

Early Picture of Fremantle.
This illustration and those on pages 25 and 33 are from old drawings given to the Public Library by the descendants of Sir James Stirling.

" There is every reason to be satisfied with our experience up to the present time." Fishing had been much and successfully practised. " The rivers and coasts abound in fish, and great supplies of food have been drawn from that source. Not less than forty boats have been constructed in the settlement."

Having dealt exhaustively with the facts, Governor Stirling proceeded to " matters of speculation rather than of certainty." He laid it down that the qualities of the territory to which the best informed persons attend in

forming an opinion of its future prospects are: its climate and soil, its position for trade, and the products of the sea in its vicinity. Regarding climate he wrote: "That it is favourable to health in an uncommon degree is the undoubting persuasion of every one with whom I have spoken." Of the absence of rain from the commencement of November he says: "This drought of three or four months fortunately occurs at the season proper for harvest; it is, however, too long for the purposes of pasturage, for which the Colony may be extended three degrees to the southward." Of the soil he confessed himself unable to offer a sound opinion.

> The most skilful farmers from England profess themselves at a loss to form a judgment here; as processes in vegetation are going forward before their eyes, even on mere sands, which are wholly irreconcilable to their pre-existing notions and modes of judging. I think I am safe, however, in stating that the sandy soils on the coast produce a shrubby herbage on which horned cattle, horses and sheep have lived now throughout the greatest part of the year; that there is between the hills and the sea a breadth of red loamy soil, on which grain and grasses may be produced; that the banks of the rivers and numerous streams offer the richest alluvial loam; and that the hills themselves, although occasionally very rugged, are capable of becoming good sheep pasture as the soil on their sides, where it exists at all, is invariably excellent, resting on granite and whinstone.

Governor Stirling concluded on a clear note of warning:—

> The greater part of those who have come here, incapable of succeeding in England, are not likely to prosper here to the extent of their groundless and inconsiderate expectations. Many of the settlers who have come should never have left a safe and tranquil state of life; and if it be possible to discourage one set of people and to encourage another, I would earnestly request that for a few years the helpless and inefficient may be kept from the settlement, while to the active, industrious and intelligent there may be assured with confidence a fair reward for their labours. This country may at no distant period absorb, with advantage to Great Britain and herself, an immense migration of persons; any great portion of which, if sent forward too soon, will ruin her prospects and their own.

Included in the dispatch were four returns illustrating the foundations on which the structure of a great State was built. The first is a list of the vessels that during the year 1829 arrived at the settlement from the port of London, with a statement of their tonnage and the number of their

passengers. In these days of huge floating palaces, when tourists turn up their noses at ships of less than 16,000 tons, it is interesting to record that the biggest vessel that came out during the year was the "Gilmore," of 500 tons, whilst the "Eagle," of 108 tons, carried eighteen passengers. The following is the complete list:—

Vessels' Names.	Tonnage.	Number of Passengers.
Parmelia	443	55
Marquis of Anglesey	352	90
Gilmore	500	170
Egyptian	359	65
Minstrel	351	30
Eagle	108	18
Hoogly	466	190
Rockingham	423	220
Atwick	342	15
Caroline	330	60
Nancy	382	100
Wanstead	363	85
Warrior	479	165
Protector	380	90
Britannia	190	115
Medina	468	150
Edward Lombe	347	60
Eliza	344	130

The second is a return of all persons appointed to place and to situations at the Swan River, giving their names, salaries, and dates of appointment. Of the twenty names included there are several that from then till now have occupied places of high honour, son having succeeded father to the third and fourth generations in a continuous tradition of public service.

Name of Officer.	Office.	Date of Appointment.	Yearly Salary.
			£ s. d.
James Stirling, Esq. ..	Governor	30th Dec., 1828	800 0 0
Peter Brown, Esq. (afterwards Broun)	Colonial Secretary and Acting Treasurer	.. .. ..	400 0 0
Mr. Browne ..	Clerks in the Colonial Secretary's Office	Not known ..	75 0 0
Mr. A. P. Smith			75 0 0
Mr. A. Price ..			50 0 0

PETER BROUN

In the early records the name is spelled "Brown," although the signatures on documents are always "Peter Broun," the family being of French origin. He occupied the office of Colonial Secretary with great distinction from the foundation of the Colony until his death in 1846. A direct descendant (Mr. Frank Broun) filled the same office nearly eighty years later.

Name of Officer.	Office.	Date of Appointment.	Yearly Salary.
Thomas Blakey ..	Messenger to Colonial Secretary's Office ..	20th June, 1829	25 0 0
J. S. Roe, Esq. ..	Surveyor General ..	30th Dec., 1828	400 0 0
H. C. Sutherland, Esq.	1st Assistant Surveyor ..	.. .. ..	200 0 0
R. V. Edwards, Esq. ..	2nd Assistant Surveyor ..	25th Oct., 1830	200 0 0
A. Hillman, Esq. ..	Draftsman	.. .. ..	150 0 0
Mr. W. R. Clint ..	Clerk, Surveyor General's Office	8th Oct., 1829	50 0 0
John Morgan, Esq. ..	Storekeeper	30th Dec., 1828	200 0 0
Mr. Shelton	Clerk to ditto	30th Dec., 1828	50 0 0
M. J. Currie, Esq. ..	Harbour Master	.. .. ..	100 0 0
Rev. J. Wittenoom ..	Colonial Chaplain ..	13th July, 1829	250 0 0
Charles Simmons, Esq.	Colonial Surgeon	30th Dec., 1828	273 15 0
James Drummond, Esq.	Naturalist and Acting Superintendent of Farms and Gardens	.. .. ..	None
W. H. Mackie, Esq. ..	Law Counsel to Government	16th Dec., 1829	200 0 0
George Mangles, Esq.	Superintendent of Government Stock	Not known ..	None
H. W. Reveley, Esq. ..	Civil Engineer	16th May, 1829	100 0 0
10 Artificers: one at 6s. 3d., and the remainder at 5s. 6d. per working day		.. .. ..	872 9 9
		TOTAL ..	£4,871 4 9

The third return is an abstract from the General Muster Book, giving a list of the names of all persons resident in the Colony at the end of 1829, with the dates of their arrivals. The descendants of these worthy pioneers are to be found to-day all over Western Australia, and not a few of them have played conspicuous parts in building up the wealth and prosperity of the country.

JUNE 8.—In addition to the "Parmelia" passengers detailed in the previous chapter: James Moore, — Camcron, John Ferguson, John McKail, Thomas Welch, Stephen Knight, John Hall, Michael Studzor, and Maria Studzor.

JULY 16.—William Owen.

SEPTEMBER 2.—Benjamin Goodman, Isaac Jecks, Hannah Jecks, Henry Clarke, W. Harrison, — Chapman, J. Coleman, George Leake, Robert Bell, Robert Maydwell, Susannah Maydwell, Susannah Maydwell, Robert Payne, James Cockman, Lionel Samson, William Samson, John Fennager, Charles Spencer, Elizabeth Spencer, — Spencer, Revett H. Bland, John Welbourn, James Jenkinson, William Lamb, Margaret Lamb, Edmund H. Lamb, Cora Lamb, Henry Lamb, Matthew Gill, James Gill, Ann Gibbs.

SEPTEMBER 3.—Robert M. Lyon, William Nairn, — Nairn, James Nairn, Margaret Nairn, Charlotte Nairn, William Nairn, James Kenton, Mary Ann Kenton, Mary Ann Kenton, Ellen Kenton, Henry Kenton, William Dixon, Frances Dixon, Frances Dixon, John Symmons, Rebecca Symmons, John Miles, Eliza Miles, Edward P. Lennard, James Brookes, Clarissa Brookes.

SEPTEMBER 4.—Nathaniel Cowel, Elizabeth Cowel, Nathaniel Cowel, John Cowel, Frederick Cowel, Eliza Cowel, Phoebe Cowel, Felix Cowel, Maria Harlow, Joseph Robinson, W. Littlemore, Thomas Harrison, Isaac Nelson, Harriet Nelson, John Nelson, Sophia Nelson, William Nelson, J. Heemshire, John Cleland, Richard Wells, S. S. Wells, George Christmas, Elizabeth Christmas, Charles Christmas, Ruth Christmas, William Christmas, George Christmas, Joseph Bright, Alexander Forbes, Joseph Hunter, J. Collyer, Robert Butt, David King, Hannah King, Henry King, Mary Ann King, Richard Earl, Mary Earl, George Earl, William Smith, Mary Smith, Edward Smith, William Smith, John Smith, James Smith, Mary Smith, John Nye, William Nye, Edmund Northecut, Jane Northecut, Charles Northecut, Thomas Petit, John Buttenshaw Cox, Sophia Cox, John Cox, Richard Cox Edward Cook, Samuel Burgess, Henry Taylor, James Knight, Robert A. Partridge, John Smith, Thomas Porley, Sarah Porley, Caroline Porley, Ambrose Porley, John Wade.

SEPTEMBER 24.—Daniel Carter, Elizabeth Carter, John Menzies, Henry Sawyer.

SEPTEMBER 25.—William Short, John Patterson, Joseph Key, William Gawler, A. Price, R. Clint, John Smith, Matthew Hargrave, John Walgreen, John Cole.

OCTOBER 7.—Thomas B. Wall, Matilda Wall, George Wall, Matilda Wall, Mary Ann Wall.

OCTOBER 8.—John Kella, Robert Chalmer.

OCTOBER 13.—Henry Trigg, W. H. Edwards, Thomas Dent, Joshua Gregory, Frances Gregory, Joshua Gregory, Augustus Gregory, Francis Gregory, Henry Gregory, Charles Gregory, John Horspool, Mary Ann Horspool, Thomas Hester, Sophia E. Hester, Thomas Hester, Edward Hester, Robert Hester, Frederick Hester, Sarah Hester, James Longbottom, John Orkey Davies, Frances Davies, Francis Davies, John Davies, Henry Davies, Elizabeth Davies, Ann Davies, Frederick Davies, Sarah Davies, William Wire, Margaret Wire, Fanny Wire, William Holdship, Thomas Hawkins, John Hawkins, Daniel Scott.

OCTOBER 15.—Samuel A. Talbot, George Maple, William House, James House.

OCTOBER 20.—Henry Campfield, William Smith, — Smith, William Smith, Frederick Friend, Francis Friend, Mary Ann Friend, Alfred H. Stone, William Crittal, Thomas Tomsett.

October 21.—James Minchin, Elizabeth Minchin, James Minchin, Andrew Minchin, Eliza Minchin, Alfred Minchin, Huther Minchin, Thomas Waters, Alexander Browne, William Everard, William Bachford, Lucy Bachford, Thomas Hewsher — Thomas Bannister, Jesse Wood, John Ebinger, David Bebell.

October 22.—Richard Jones, Louisa Jones, Richard Jones, William Jones, Louisa Jones, Mary Jones, Maria Jones, John Robertson, Christian Robertson.

October 23.—Charles Chilcott, Mary Chilcott, Charles Chilcott, Longford Chilcott, Mary Chilcott, William Kernot Shenton.

October 24.—Richard Maxworthy, Mary Ann Maxworthy, Richard Maxworthy, Mary Ann Maxworthy.

October 27.—Louis Mayo, Hugh M'Donald.

October 28.—Richard Wardell, Catherine Wardell, Charles Callow, George Ryder, John Roper, Mary Roper, Peter Pegus, Mary Pegus, William Pegus, John Purkis, James Philan, Joseph Knevett, Sarah Purkis, Sarah Purkis, John Whatley, Ann Whatley, Johanna Whatley, Mary Whatley, George Emberton, Dorothy Emberton, Robert Emberton, John Woods, Philip Dod, John Limar, Sarah Limar, G. E. Cameron, John H. Morgan, Mary Morgan.

October 29.—Richard Shoesmith, Richard Gallot, James Gallot, Edward Gallot, William Grover, Isaac Doel, Robert Budden, Richard Sparrow, John Cook, William Okeley, John Tucker, Charles Hewitam, William Hill, George Pike, John Mares, Charles Wiskill, John Allie, Richard Thorn, William Lewington, Charles Lintott, George Chuman, Charles Green, John Hubbard, John Barnard, Eliza Barnard, Edward Barnard, William Barnard, Ann Barnard, Charles Barnard, James Goodyer, Harriet Goodyer, John Goodyer, William Beechum, Mary Ann Beechum, Jane Beechum, Reuben Beechum, James Beechum, Levi Beechum, Elizabeth Beechum, William Wood, Louisa Wood, John Wood, Jane Wood, George Wood, Maria Wood.

October 31.—William Bolten, Thomas Campbell, John A. Dutton, Mary Ann Dutton, John Dutton, Frederick Dutton, Julia Dutton, Charles Vines, Evan Powel, Edward Picking, William Hide, Ann Hide, William Hide, John Hide, Steven Hide, George Thorpe.

November 2.—John L. Morley, William Field, Mary C. Morley, Chan Homed, Moosan Nochachanar.

November 3.—Douglas Thompson, Spencer Trimmer, William Murton, John Wygate, — Wygate, John Lomson, Eliza Lomson, James Pollock, Richard Greigg, John White, George Phiffin, George Jennings, Thomas Doherty, William Dodd, Bayley Maycock, George Layman.

NOVEMBER 6.—James Henty, George Henty, John Henty, George Hills, Mary Ann Hills, Mary Ann Hills, George Hills, John Chipper, Mary Chipper, Charles Gee, Mary Ann Gee, Charles Gee, Joseph Gee, William Gee, Walter Gee, Alfred Gee, George Rewell, Jane Rewell, William Rewell, Ann Rewell, George Bushby, Mary Bushby, William Bushby, Richard Bushby, Benjamin Sandford, Frances Sandford, William Sandford, Charles Sandford, John Sandford, Stephen Sandford, Robert Price, Daniel Patterson, William Dyer, — Bardon, Richard Haybittle, T. W. Goble, Robert Collins, Georgiana Collins, Georgiana Collins, Charles Smith.

NOVEMBER 7.—William R. Steele, Ann Steele.

NOVEMBER 10.—Richard Lewis, Charles Garrett.

NOVEMBER 11.—John Ferris, Janet Ferris, Ellen Ferris, Robert Ferris, Samuel Jackson.

NOVEMBER 14.—Joseph Brignell, John Brignell, Charles Wright.

NOVEMBER 17.—W. H. Mackee, Richard Holland, John Bludsell.

NOVEMBER 21.—Henry Pudney.

NOVEMBER 30.—Richard James.

DECEMBER 4.—Thomas Robinson.

DECEMBER 7.—Alexander Robertson, Edward Salter, James Davies, Robert Wilson.

DECEMBER 18.—Thomas Worrall.

Supplementary list of persons actually in the Colony, but whose names had not been entered in the General Muster Book at the end of the year :—

Frederick Brown ; William Hickman ; William Glover, wife, and two children ; John Wade ; Thomas Peel, Esq., and one son ; Captain Mears, late of 15th Hussars, wife, four sons and four daughters ; P. G. Mears, Esq. ; George Dunnage, Esq. and wife ; Mr. and Mrs. Lyttleton and two children ; Mr. A. W. Elmslie and two children ; Mr. E. Watterton ; Mr. C. Larkin ; Mr. R. Haymes ; Mr. T. Watson ; Mr. J. Galiame ; Mr. L. F. Cook ; Mr. W. N. Inglis ; Mr. A. Armstrong and six children ; Mr. A. Adean ; Mr. T. Brown, wife, and three children ; William Bailey, wife, and three children ; Richard Beale ; D. Barwell ; John Baskerville ; John Bexter ; William Beadman ; John Crisp, wife, and six children ; B. Crane, wife, and three children ; — Cousins, wife, and four children ; Charles Cockett ; Benjamin Cook, wife, and one child ; Arthur Glap ; William Leaton ; James Collier ; — Edgecombe and four children ; Flaherty and six children ; Levy Fulham ; Henry Firward ; William Gaze ; James Grix ; Thomas Hobley ; Louisa Hame ; James Inkpen, wife, and five children ; Charles Jackson ; Henry Jones ; William Jones and wife ; — Keats ; Robert Leesham ; F. Lipsecombe ; H. Lewis, George

Mackenzie ; George Murphy ; — Pengilly, wife, and one child ; — Petit, wife, and seven children ; — Potter, wife, and one child ; Thomas Pence ; George Pepper ; Richard Powell, wife, and three children ; Joseph Perry ; George Preston ; J. G. Robertson ; — Smithers, wife, and eight children ; — Smythe, wife, and five children ; George Smith ; John Smith ; Thomas Hunter ; Peter Steward ; — Thomas, wife, and five children ; William Joomy ; Thomas Wilson and two children ; Thomas Welch ; John Wolman ; Sarah Wise ; John Ward ; — Farquhar ; — Johnstone.

Since arrived :

The " Nancy " from London, with 45 settlers ; and the " Norfolk " from Sydney, with four settlers ; and the " Skerne " from Liverpool, with 20 settlers.

Also :

64 officers and men, 22 women, 19 children, comprising the detachment of the 63rd Regiment ; 57 officers and men, 3 women, 2 children, belonging to His Majesty's Ship " Sulphur " ; 170 officers and men on board on His Majesty's Ship " Success " ; Thomas Brown.

A further return gives a list of the persons who had claimed land —in accordance with the regulations issued at the beginning of the year—and a description of their families, servants, and property imported into the Colony.

IV: TRIALS OF EARLY SETTLERS.

IN EVERY colonising enterprise the world over, the major difficulty has been to harmonise central control with local requirements. Western Australia was no exception to the rule. Troubles accumulated and quickly threatened the very life of the young community. A hundred years ago the British Government had set up a body known as "the Commissioners for Emigration," which seems to have corresponded closely to the Empire Settlement Committee that has functioned in England with such indifferent success of recent years. As early as the beginning of 1831 these Commissioners reported:—

> "The only places to which we consider that emigrants can proceed with advantage at this season are New South Wales and Van Diemen's Land. In the present early stage of the settlement at Swan River we have judged it inexpedient to take any steps which might direct thither a larger number of emigrants than would at any rate choose that destination." And in a circular setting out the conditions obtaining in the different colonies available to emigrants is included this discouraging paragraph: —"The Commissioners for Emigration take this opportunity of announcing that they are not prepared to undertake the conveyance of emigrants to the settlement on the Swan River."

What were the causes of this early set-back? It is quite safe to say that the main cause was the disappointment of the earlier arrivals in not being able to obtain the land promised to them at the time of their embarkation. On April 18, 1829, when Captain Stirling and the first batch of emigrants were approaching the Cape of Good Hope, a somewhat startling letter, signed "P.P.," appeared in the London *Times*. This letter, after quoting the regulations under which persons arriving in the Colony by the end of 1830 were promised, in the order of their arrival, grants of land, went on to say:

> Those persons who are gone, or who contemplate removing to that settlement, have, I conceive, been defrauded of their just rights and expectations, inasmuch as they will have the mortification to find on their arrival that all the land available for

useful purposes has been already appropriated. I say "on arrival" because the Government have not thought themselves bound to disclose this alarming fact, no mention of the grant having been made in their printed regulations. The settlers who are already gone were assured by the gentleman who is appointed Governor, and to whom they were referred by the Colonial Office

Old Mill at South Perth.

for information on the subject: That no land would be appropriated but to such settlers as should arrive at the settlement with their property; that no land could by any possibility be allotted in THIS country to any individual whatsoever; that the first settlers would have the first choice of the land; and that each settler would receive a certain frontage of the rivers or harbour. Now in defiance of these assurances, and in face of the regulations, the greater portion of the two rivers, Swan and Canning, as well as the entire shore in the harbour together with all the intermediate land—in short the only really serviceable part of the new settlement to the extent of nearly 400 square miles—has been granted to one gentleman who has no intention of emigrating and who has issued printed letters inviting settlers to go out and stating the terms on which he is disposed to let his land.

About the same date the *Observer* published an interesting comment on the settlement on the Swan River:

It is said that the most valuable part of the land of this settlement has been already parcelled out amongst three persons who have

> no intention of emigrating: one of them an illegitimate son of a late Royal Duke, another an illegitimate son of a noble Lord; the third a cousin of Mr. Secretary Peel, to whom it is affirmed the greater portion of the two rivers, Swan and Canning, the entire shore in the harbour, and all the intermediate land, to the extent of nearly four hundred square miles, has been allotted.

There seems to have been very little justification for these scandalous reports. So far as the attack upon Mr. Peel was concerned, the allegation that he had no intention of migrating was quickly disproved. The *World* of July 30, 1829, had this picturesque paragraph:

> The ship "Gilmore," 500 tons, which has been for some time lying in St. Catherine's Docks, and which has been purchased by Mr. Peel for the purpose of conveying himself, and the persons immediately connected with him, to his intended new settlement on the Swan River, left Gravesend on Monday for Plymouth, at which place she will receive Mr. Peel and suite on board, and then proceed immediately for her destination. We paid a visit to the ship just before her departure, and were much pleased with her arrangements. Like a second Noah, Mr. Peel has been careful to preserve for the new Ararat on which his ark is destined to rest, specimens of "every living thing, male and female, after their kind." Horses, cattle, sheep, goats, geese, ducks, decently paired and comfortably accommodated, crowded the upper deck; and the bulwarks of the vessel were kept warm by bundles of hay lashed to her sides. There appeared to be a great number of children amongst the passengers, and the settlers, though apparently labouring under depression at the idea of leaving their native land, expressed confident hopes of the success of their undertaking.

Following upon a number of attacks on the settlement, the *Times* on June 6, 1829, published what was doubtless an inspired article:

> The following we believe will be found to be a correct statement of the facts relative to the proposed grants of land on the Swan River:—It was proposed that 250,000 acres of land should be granted to each applicant, who, to relieve their overburdened parishes, agreed to take out at their own expense, 1,000 families to the new settlement, granting each family 100 acres of land, and 500 acres for every township of ten persons for church, schools, hospitals, etc., so that taking 1,000 families at 5,000 souls, 100,000 acres would be directly divided amongst the settlers in fee simple, 50,000 acres would be appropriated for public purposes, and the remaining 100,000 acres would be the proprietor's, to reimburse him for the expense of taking out the people, etc., who would work for him three days a week for seven years. A difficulty arose as to the indemnification to be given to the

> parishes (who were to furnish clothing, etc., at the rate of £50 for each family of five persons) for their not returning again, which Government could not surmount; and Mr. Macqueen and others, who were actuated by the desire of relieving those parishes where distress and want of employ were driving the unfortunate inhabitants to poaching and other destructive habits, very properly withdrew when the principal object they had in view could not be attained.

One does not need to go beyond Governor Stirling's dispatches to appreciate the difficulty that was experienced in finding land for settlers upon their arrival. But there is other evidence. Parliamentary Paper No. 685, of August 6, 1838, sets out that between June, 1829, and the end of 1831 the quantity of land assigned to or reserved for civil, naval, and military officers was as follows:—Civil, 19 persons, 162,062 acres; naval, 16 persons, 33,680 acres; military, 11 persons, 30,862 acres. There were also reserved for 16 private individuals 60,880 acres. Whilst all this land was locked up for persons who—whatever might be the merits of their claims—did not propose personally to put it to immediate use, faith was not kept with a great many *bona fide* settlers who, relying upon the promise of the British Government contained in the regulations of January 13, 1829, had mustered the whole of their resources and journeyed to the new settlement.

The diary of Mr. George Fletcher Moore—Advocate General of the Colony—who arrived in 1830, was published in the *West Australian* newspaper in 1881 and reprinted in book form three years later. It not only sets out in detail the difficulties and hardships of the colonists but breathes throughout a magnificent spirit of confidence and cheerfulness. Governor Stirling and his lady devoted themselves ceaselessly to the maintenance of a healthy spirit of social enjoyment. In August, 1831, Mr. Moore wrote: "I had no notion there would be so much society here, so much gaiety, so much dressing," and again in the following month: "In the evening at the Governor's house we had 180 ladies and gentlemen." In January of 1832 he wrote:

> Our colonists are complaining that their friends and connections at home have made so little exertion to assist them through their first difficulties. Vessels have not been encouraged to come here and those that have arrived have brought scarcely any

> provisions. We have at present only a few weeks' supply of flour and are totally without rice, maize, peas, barley, or oats: we may have as much wheat as may serve for six weeks with great economy; but it is already selling at 25s. per bushel. Vessels have been expected daily for the last three months but we are now sick of hope. A helping hand now is greatly needed. I have been fourteen months in the Colony and what a change everywhere here! How much has been effected by the unassisted, unencouraged industry of a few individual settlers! We are all eating the produce of our own fields, and how sweet our bread! Two or three hundred head of cattle and two or three thousand sheep would be purchased by us if they were sent by Government at a fair rate and they would establish the Colony . . . Nothing surprises me more than that we never baked our own bread at home. Nothing is more simple. The produce of an acre of wheat would supply your family for a year. A hand-mill, sieve, and metal oven are the only machinery required. There is no mystery in baking, where fraudulent adulterations are not particularly desired.

Ploughing in those days was done by bullocks—by those who could afford to buy them at about £25 per head. The method of wheat sowing was dibbling it in with forks. Sheep were very dear. Mr. Moore writes of eighty-two very poor sheep from Tasmania having been purchased by Mr. Tanner at 33s. per head, whilst he had vainly offered £50 for seventeen merinos. He urged Government to arrange advances to settlers at reasonable rates, as many were paying up to 25 per cent. for loans.

> Did ever a colony, he asks, make such a struggle as ours has done without extraneous assistance? Sydney and Van Diemen's Land were aided by forced labour, and stimulated by Government expenditure; but we have had no such support; we have relied solely on our own efforts; and yet under the most discouraging circumstances are prospering.

In the Mitchell Library in Sydney is a bound manuscript volume containing a number of letters written by William Shaw and his wife (Elizabeth Shaw) to friends in England, and dated from the latter part of 1829 to March 1833. The Shaws were Leicestershire people, of considerable education and refinement. They, like many others, were induced to emigrate in part by the unhappy condition of affairs in England, in part by the specific promises made in official publications, and in part by the glowing prospects held out in such articles as that appearing in the *Quarterly Review*. In particular, they relied upon the

Perth in 1832. (*From a drawing by Mr. C. D. Wittenoom. Now in the Victoria Public Library.*)

Perth in 1929.

Government's promise of free land to all "such persons as may arrive in Swan River settlement before the end of the year 1830, proportioned to the capital they may be prepared to invest in the improvement of the land."

From the wording of the regulations issued from Downing Street on January 13, 1829, it must be assumed that the authorities did not contemplate any difficulty in providing land for all those who fulfilled the conditions. The promise of free land was, in fact, the only inducement held out to emigrants, the whole expense of their conveyance to the Colony, and the responsibility of supplying provisions and other requirements resting upon themselves. In view of the complaints of delay in obtaining suitable land, made by present day migrants, it is interesting to find that the clear obligation of the British Government in this matter was but indifferently performed—even so far as the very early arrivals were concerned. Mrs. Shaw's first letter—written just after they reached Fremantle—is eloquent on this point:

> Shaw, after being two days away, returned to ship with countenance blank with disappointment. The Governor had told him there was no land to be given away on the Swan River, and he would advise all who could to go to the southward, where the land was reported much better than here. It would cost as much, or nearly so, to go there as to come from England. The fact is simply this: All the land that is good for anything—and that is but a small patch here and there—is kept as Government reserves, and what land is given is given to Jews, stockbrokers, men-of-warsmen, etc., and out of 1,800 souls now come to the Colony in hopes of living—or at least of not being starved to death—there are not a dozen who know what they are to do or where they are to go. The people look actually horror-struck at one another in absolute despair. There are some who have been here nine months and who have sown different seeds at different times but they have all invariably died away and there is not one who has been able in the Colony to raise either potato, cabbage, or any other vegetable. That man who reported this land to be good deserves hanging nine times over.

In other of the earlier letters are passages suggestive of troubles which a hundred years of progress have entirely removed. The family had brought out with them from England a maid, and of her Mrs. Shaw writes: ". . . has turned out most sadly. She is without exception the idlest, dirty, saucy slut that ever got into any

person's family." High wages was another cause of complaint on the part of those who wanted to get anything done:

> Carpenters get from 10s. to £1 a day. . . . A man with a little money would make a rapid fortune here. It is astonishing the number of wealthy families out here. Amongst the abuses in this new Colony is one man—a stockbroker—who has a grant on the Swan River with seven miles of the water frontage. We have lots of Jews settling here. Money is so scarce that it brings readily from 25 to 30 per cent.; and gents who sometime since in England rode in their carriage are now weighing out a quarter of a pound of tea and half a pound of rice.

Notwithstanding these disillusions the migrants were not blind to the chances offering in the infant settlement, and on March 14, 1830, Shaw wrote: "My friend Casson, in his circumstances, cannot well do wrong in coming out the first opportunity." Characteristic of the letters is the fortitude with which acute personal discomforts were accepted. Mrs. Shaw writes:

> I never expected Turkey carpets or marble mantelpieces, though had I been aware of the full extent of all to be undergone in the first instance I might have shrunk from it appalled. Were all we regard and love with us, I do not think—apostate as I am for saying so—I should cast many longing, lingering looks back to England. I fear her prospects are far from bright, she is certainly far past the meridian of her glory. . . . The times are awful and portentous.

One of Mrs. Shaw's letters gives an interesting list of the prices ruling for every day requirements:

> Fresh butter has never been sold here under 4s. 6d. per lb., and the dairy people say it does not pay to make it at 5s.; Irish butter is 3s. 6d. to 4s. 6d.; Irish pork £10 per cask of one hundred pounds; beef the same; flour 7d. per lb; sugar (coarse) 1½d., good 3½d.; tea 3s. 6d. to 4s. 6d.; cheese 2s. 10d.; rum 5s. to 7s. 6d.; rice 7d.; clothing very dear; boots up to £4 4s., the cheapest shop boots sold in London at 3s. to 5s. 6d. bring 16s. to 25s., and are not often to be had for any money. Mr. Leake —a merchant in Fremantle—received 300 pairs of shoes by the "Egyptian" and sold every pair in one day. Fowls 15s. per couple.

And so on. Only rum and sugar seem to have been cheaper than they are to-day!

But through all the earlier letters the one insistent complaint is of the failure to obtain suitable land. After much

delay the family was settled on a block on the banks of the Swan River near Fremantle—the locality is not more clearly specified. It proved a poor proposition. The hardest of hard work and the cheerful suffering of countless and acute discomforts brought no reward. Just when things seemed to be at their worst, Shaw was taking into Fremantle, to sell, some fresh pork, the remains of a pig he had killed and with the proceeds of which he hoped to purchase urgently needed household requirements. He was to find that

> This wide and universal theatre
> Presents more woeful pageants than the scene
> Wherein we play.

He met a man sick with the scurvy who told him he had had no fresh meat since he landed in the Colony. He was without money, but begged of Shaw to give him the fresh pork in exchange for some salt meat he had. Salt meat was no use to Shaw but he gave the sufferer his fresh pork and went home empty-handed.

A few weeks later Mr. Brockman introduced Shaw to a Mr. Lyon, who offered him a fine block of land at the head of the Swan River. Shaw was surprised at the generous nature of the offer—doubtful and suspicious—but Lyon said: "You have a large family and have been in the Colony a long time and have not got a grant. I have had the pleasure, though unknown to yourself, of seeing you before. Do you remember giving a person a piece of fresh pork and would not take his salt meat for it? I stood near enough to hear all that passed, though unnoticed by you, and I am delighted to have it in my power to be of service to one who could evince so kindly a feeling. I have a grant of land that I cannot make use of. I have had money offered for it but you and your family shall have half of it."

Subsequent investigation proved the land unsuitable for division so the Shaws were given the lot, and on the 30th October, 1830, left for "Belvoir," then described as "45 miles up the river." The journey by boat occupied a fortnight. A letter written some time after arrival at Belvoir refers to "Miss Viveash, sister to Mrs. Tanner our neighbour, a very lovely and lady-like woman." The letters

are full of grateful references to the Governor and his wife, and in one Mr. Shaw says : " Our Colonial Secretary (next to the Governor the first man in the Colony) and his lady, Mrs. Brown (afterwards Broun) have ever shown the most marked and friendly attention."

"Belvoir," the Shaws' home, drawn by Mrs. Shaw in 1833, and reproduced by permission of the Trustees of the Mitchell Library, Sydney.

Two extracts from later letters are worth quoting. From Mr. Shaw, April 3, 1831 :

> In regard to what the Colony is to be, watch closely the measures of the Home Government. Of our authorities enough will be said and canvassed in England, and knowing that it is much easier to be governed than to govern, in charity I say we are not altogether devoid of worth, though I would we had not so many glaring errors. Should any emigrant expect to find this Colony overflowing with milk or honey, or to gather figs and grapes from thorns or briars, or to be able to get crops without fair management, he labours under a great mistake. Patience, perseverance, philosophy, industry are indispensable requisites. The emigrant possessing these and fortunate in getting a good grant will ultimately succeed, but if devoid of them, and unable to bear disappointments, with occasional hunger and thirst, let him stop at home.

And from Mrs. Shaw on January 21, 1833 :

> Our heads are above water ; our grant is allowed to be the best on the river of its size, and great prices are offered for estates not so good as ours. My heart hungers and beats towards old England, but really this is a life not at all disagreeable, excepting the privations we undergo : the air so pure, the scenery so beautifully park-like, and the idea that as far as we can see is all our own.

V: TEDIOUS AND DIFFICULT YEARS.

RARELY has there been a more pitiable contrast between promise and performance than was furnished by the first few years of the new settlement. During 1830 there were many new arrivals and at the end of that year the total population was 1,767 souls; ten years after the foundation of the Colony the population was still under 2,000, and at the end of twenty years it was only 4,622. At a very early stage the regulations in regard to the granting of land were altered. New regulations were issued from the Colonial Office on March 1, 1831. In these it was intimated that "a division of the whole territory into counties, hundreds, and parishes is in progress, and when that division shall be completed, each parish will comprise an area of about twenty-five square miles." It was further announced that all the lands

An early picture of Fremantle.

in the Colony not hitherto granted, and not appropriated for public purposes, would be put up for sale, no land to be sold below the rate of 5s. per acre.

The conditions of purchase would to-day be considered unattractive. Persons desirous of purchasing land were permitted to select, within certain defined limits. The selected portions were to be advertised for a period of three months and then sold to the highest bidder, providing a price of not less than 5s. per acre was realised. Ten per cent. of the whole value had to be paid at the time of sale and the remainder within one calendar month from the day of sale. A fee of 40s. was payable to the Colonial Secretary for preparing the grant and another fee of 5s. for enrolling it. It was contemplated that land would be put up in lots of 640 acres. The Crown reserved to itself the right of taking timber, stone, and other material from the land for the construction of roads and bridges, and also reserved to itself all mines of precious metals. The only concession offered to settlers was an abatement of £20 on the purchase price of the land for the passage of every married labourer and his family taken to the settlement by the applicant. All the expenses of migration had to be borne by the settler himself. During 1830—whilst the original conditions were in force—settlement had been pushed out east of the Darling Ranges and the townsites of York, Northam, and Beverley had been allotted. The effect of these regulations of 1831 was most unhappy. In the first couple of years of settlement several people came from New South Wales and Van Diemen's Land to spy out the country, but in the succeeding years there was an exodus from the settlement almost equalling the number of new arrivals, plus the natural increase in population. A publication entitled *The British Colonies*, and issued in 1850, said :

> In one, and in only one respect has the Swan River settlement really failed, and that is in attracting immigration ; in almost every other it has succeeded. Its trade has increased, crime among the Europeans is almost unknown, and its present settlers —*who are in general its original settlers*—have, in proportion to their numbers, effected a creditable extent of tillage, and evinced a very praiseworthy spirit.

The struggles which the settlers of 1829-30 were called upon to undergo, and which undoubtedly discouraged immigration to the settlement in succeeding years, were set out in what was described as a " monster address "

signed by a large number of settlers and subsequently transmitted by the Governor to Earl Grey. The address was couched in vigorous language, and whilst it may be supposed that it presented a somewhat exaggerated picture of the sufferings attending the foundation of the settlement, there can be little doubt that it revealed certain of the errors that had been committed. One passage reads:

> The entire material of a settlement, the official staff, settlers, property and live stock, were hurried out to an unknown wilderness before one acre was surveyed, before one building has been erected, before even a guess had been formed as to the proper scene of their labours, before the slightest knowledge had been obtained of the soil, climate, products or inhabitants. Nay, further, it was absolutely made a condition of the grants of land that the emigrant should not only arrive, but bring his family, dependants and property into the Colony while in this state. The ghastly spectacle of the townsite of Clarence—its sole edifices, crowded, hurried, and neglected tombs—its only inhabitants corpses, the victims of disease, starvation, and despair—the sea beach strewn with wrecks—the hills and borders of the river studded with deserted and half-finished buildings—bear witness to these consequences, and speak of brave men, delicate females, and helpless children, perishing by hundreds on a desert coast from want of food, of shelter, and even of water, and surrounded by armed hordes of angry savages.
>
> It were wholly impossible to estimate the vast amount of property of every sort buried for safety in the sands of the shore and never recovered, or the multitude of most valuable and high-bred stock of all descriptions, whose skeletons whitened the beach or filled the morasses they had been forced to enter in the desperate search for even fresh water. Can we wonder then that thousands rushed from such a scene with the relics of their capital to people other colonies; or even that numbers sat down in the frenzy of despair beside the spirit cask, never to rise from it alive? Can we wonder that the name of the Swan River should, throughout the civilised world, become identified with failure and ruin, and that the survivors of such carnage should be left alone by their fellow men to carry on an enterprise so dreadfully begun? Or may we not rather indulge in a justifiable pride in the resources of a country and the energies of a people who, from such a commencement, have, under Providence, elaborated even the civilisation which your Excellency may already see around you?
>
> But these terrible scenes, brought on by the unjustifiable attempt to hurry a colony into existence before steps had been taken for its security, are far from being the termination, or even the most injurious, of the errors which have plunged us into our

present difficulties. At the very time when the unhappy immigrants were crowded on the beach, wasting and losing all their means, the conditions of their immigration told them that they had but a limited time to select and improve their grants. And, more monstrous still, this time was actually expired before these grants were surveyed. A minor, but yet very ruinous error, consisted in limiting the investment of capital, which produced a vast accumulation of the same articles, and total want of others and of money. The majority of the imported articles could not be of use for some years, and each settler was induced to bring more than he required in hopes of sale. The want of storehouse caused the destruction of all these.

As if sufficient means had not been used to destroy our capital the system of location duties was added, by which the settler was compelled to prove that he had wasted 1s. 6d. per acre in permanent improvements. The result was the erection of multitudes of cottages and fences, etc., in remote, and at the time, wholly uninhabitable places, which were, of course, allowed to become the prey of the elements, as soon as the expensive farce had been performed.

In 1830 and 1831 the number of new arrivals in the Colony was considerable, though there were long intervals between ships. The diary of Mrs. Currie—wife of Commander (afterwards Admiral) Mark J. Currie—contains this impressive entry: "March 5, 1831, Ship 'Eliza' from England brought news of King George's death on 26th June, 1830—nine months before." After the first quarter of 1832 the emigration of persons and property was suspended, except so far as related to the friends and funds of persons already established in the Colony. By the end of 1835 immigration had entirely ceased. One reason assigned for this was the lack of interest on the part of the great London companies which at that time exercised a

An early picture of Beaufort Street Bridge, Perth.

most powerful influence in favour of the colonies to which they were attracted. The misfortunes endured at the foundation of the Colony, and the failure of Mr. Peel's enterprise, in which he was said to have lost his whole fortune of £50,000, caused interest to be withdrawn from the Swan River. Almost at the same time companies arose to push forward other colonies and the neglected little settlement was forgotten.

A return published in 1850, and brought up to the previous year—twenty years after the foundation of Western Australia—set out the state of the colonies on the continent of Australia at that time, and showed how the two colonies of Victoria and South Australia (each established some seven years after Western Australia) had out-distanced the settlement on the Swan.

STATE OF THE COLONIES ON THE ISLAND CONTINENT OF AUSTRALIA (PUBLISHED 1850).

Particulars.	New South Wales.	Victoria.	South Australia.	West Australia.	Total.
Date of Formation ..	1787.	1836.	1836.	1829.	..
Area in square miles, about	500,000	92,000	300,000	1,000,000	2,000,000
White population, about ..	200,000	50,000	50,000	5,000	305,000
Number of acres to each inhabitant	1,600	1,117	3,840	128,000	..
Acres of land in cultivation	130,000	40,000	50,000	8,000	228,000
Live Stock—					
Horses	100,000	17,000	6,000	3,000	126,000
Horned cattle ..	1,400,000	400,000	100,000	12,000	1,912,000
Sheep	7,000,000	5,200,000	1,200,000	150,000	13,550,000
Swine	70,000	6,000	1,500	2,500	80,500
Maritime Commerce—					
Value of imports in £	1,300,000	500,000	400,000	45,000	2,245,000
Value of exports in £	1,500,000	600,000	500,000	35,000	2,635,000
Shipping tonnage inwards	140,000	70,000	40,000	5,000	255,000
Local Revenue in £ ..	300,000	100,000	120,000	10,000	530,000
Civil Cost to Great Britain in £	..	..	..	7,500	7,500
Military Cost to Great Britain in £	70,000	..	16,000	11,000	97,000
Taxation per head. in shillings	30	40	48	40	..
Consumption of imports per head in shillings	130	200	160	180	..
Staple Exports—					
Wool, in lbs.	16,000,000	14,000,000	3,000,000	400,000	33,400 000
Tallow or Oil, in cwts.	60,000	28,000	3,000	..	91,000
Metals, in £	25,000	..	350,000	..	375,000
Chief Town	Sydney	Melbourne	Adelaide	Perth	..
Population of Capital ..	50,000	15,000	15,000	1,500	..

Hay Street, Perth, in 1870.

It has been declared by some writers that during the first three or four years of settlement the population increased to as much as 5,000 people, and that the exodus, consequent upon the dissatisfaction of the settlers, brought it back to about 1,200. There does not seem to be convincing evidence of the accuracy of either statement, though there is abundant proof that many people came from the old country intending to settle in Western Australia and, instead, passed on to the Eastern Colonies, whilst some came from the east—particularly from Tasmania—and went back disappointed.

The impossibility of obtaining suitable labour was the chief obstacle to progress, and already (in 1831) suggestions had been made that the importation of convicts might be considered desirable. Frequent trouble with the natives added to the difficulties of the outlying settlers. There were occasional lootings, and murders by natives took place, particularly on the York Road and in the Murray

An earlier view of Hay Street from Parliament House Grounds.

district. In July, 1834, two settlers were murdered by natives and two others severely wounded. This led to the organising of an expedition and to the so-called " Battle

of Pinjarra," in October of the same year, in which more than half of the male members of the Murray River tribe were killed. Captain Ellis, the superintendent of police who had charge of the expedition, was wounded and died within a fortnight. The survivors of the tribe were made to understand that any further murders and depredations would lead to their complete extinction. They no longer doubted the ability and the determination of the white man to carry out the threat, and the trouble was ended.

Both in 1832 and 1833 the settlers were brought almost to the verge of starvation. In the latter year the Government schooner was despatched to Mauritius for supplies, and other vessels arriving in September relieved the position. At the end of 1833 a bountiful harvest gave the first real encouragement to the hard-pressed community. Throughout these early years of trial and tribulation it was the character of the people that won through. Tireless energy, magnificent endurance, and a faith in themselves and in the country that neither natural obstacles nor administrative discouragements could destroy, brought them successfully through almost unexampled travail. It must be placed definitely and emphatically upon record that the Colony of Western Australia was made by the little group of emigrants from England who landed in the first couple of years of the Swan River settlement.

To such an extent had the adverse conditions discouraged new arrivals that eight years after the landing of Captain Stirling there were only 263 more people in the Colony than at the end of the second year. In brilliant contrast stand out the achievements of this little band of 2,000 souls, the value of whose property at that stage (1837) was estimated at £260,000, producing an annual accumulation of capital of £72,000. They were growing more wheat than they could consume for food and seed, and the number of sheep had increased to over 16,000; this in the face of heavy losses from poison. In 1836, when people in England were talking of the complete failure of the settlement, a cargo of wheat was sent from Western Australia to New South Wales, where a severe drought was experienced.

The nature and extent of the official discouragement is illustrated by the persistence with which the home authorities clung to the arduous conditions of land settlement introduced in 1831 and which could only have sprung from a very complete ignorance of local conditions. The Agricultural Society, founded at the outset of settlement and composed of men who had staked their all on the success of the enterprise, expressed the deliberate opinion that the fall in the tide of immigration was due to the alteration made in the land grant system in 1831. The Society urged that the trouble might be corrected by reducing the minimum price of 5s. per acre.

Western Australian
Agricultural Society
PERTH HOTEL
DINNER TICKET
For Friday 1st June 1832

Agricultural Society's Dinner Ticket, 1832.

By a petition presented in 1837 it was asked that for three years a return should be made to the old land grant system. The answer of the home authorities was to raise the upset price in the whole of the Australian colonies in 1839 to 12s. per acre, and the increased price became operative in Western Australia in the following year. Subsequently there was a further increase to £1 per acre. Only a portion of the bitter lesson conveyed in the loss of the American colonies had been learned; many decades had to pass before the declaration of the ultimate principle of successful colonisation: that the colonies must be free to do as they wish, whether they are right or wrong: and "more particularly when they are wrong."

All through the thirties and the forties the difficulty of obtaining labour hampered development, and such progress as was made was at the cost of almost superhuman effort and ceaseless self-sacrifice. In 1849 the settlers—despairing of overcoming the labour problem in any other way—petitioned the Secretary of State to "erect the Colony into a regular penal settlement, with the necessary Government establishment and expenditure, the whole cost of the

transmission, maintenance, and supervision of all such convicts as may be transported hither being borne by the Home Government."

With amazing alacrity the British Government acceded to the request, chiefly because it solved one of its own difficulties : the lack of a place to which to send its criminals. For eighteen years the Colony became a penal settlement. Labour was available for road-making and other purpose and progress was stimulated. By the beginning of 1868, when the transportation of convicts ceased, the population had increased to about 22,000. But it is still open to the contention that had the earlier representations of the colonists in regard to the alteration of the method of land settlement been more sympathetically received, better results might have been obtained without even this temporary departure from the principle laid down in the original regulations that "no convicts or other description of prisoners shall be transported to this new settlement."

For two more decades the tedious and difficult years continued. In 1889—sixty years after its establishment—there were only just over 43,000 people in the Colony. Then came Responsible Government. To the people themselves was entrusted the right of controlling their own affairs, of directing their own destiny. The application of local knowledge to local conditions met with an immediate response, and, a quarter of a century later, Western Australia sent over-seas, to fight the battles of the Empire, an army of soldiers—every man a volunteer—in number little short of what had been the total population of the State when the long-delayed and priceless boon of self-government was accorded !

VI: A BACKWARD GLANCE.

PRECEDING by more than two years the foundation of the Colony of Western Australia was an event of great historical importance: the first assertion of the claim of British possession over the whole continent of Australia. Dampier's landing at Cygnet Bay in 1688, or at Sharks Bay eleven years later, probably established no firmer title to British ownership than might have been claimed by the nations to which they belonged as the result of the discoveries of Dirk Hartog, Houtman, Pelsart, or Vlaming. When Vancouver in 1791 watered His Majesty's ship "Discovery" at the entrance to what is now Oyster Harbour and gave a name to King George III. Sound, he took formal possession, in the name of the King, of all the country "from the land we saw north-westward of Lake Chatham so far as we might explore its coasts." This, to say the best of it, was somewhat indefinite.

SIR WILLIAM CLEAVER FRANCIS ROBINSON K.C.M.G.
TENTH GOVERNOR OF WESTERN AUSTRALIA AT THE CLOSE OF HIS SECOND
ADMINISTRATION 9 FEBRUARY 1900 CAUSED THIS TABLET TO BE AFFIXED FOR
MARKING WHERE
CAP GEORGE VANCOUVER R.N.
AN ILLUSTRIOUS NAVIGATOR WATERED HIS MAJESTY'S SHIP DISCOVERY
IN OCTOBER 1791

Vancouver's Plate.

Quite different was the ceremony on the 21st of January, 1827. Major Edmund Lockyer left Sydney in the brig "Amity" on November 9, 1826, with instructions to proceed to King George Sound and to establish a convict settlement there. That was the ostensible purpose—and as events proved a merely passing purpose, since the convicts were all taken back a few years later. The real motive, the lasting

purpose achieved by the expedition, is made clear in the secret instructions issued to Major Lockyer by Governor Darling. After referring to the probability of the French having in view the establishment of a settlement on the coast of Australia, he went on to say:

> I am to desire in the event of their touching at King George Sound, that you will be careful to regulate your language and communications with the officers, so as to avoid any expression of doubt of the whole of New Holland being considered within

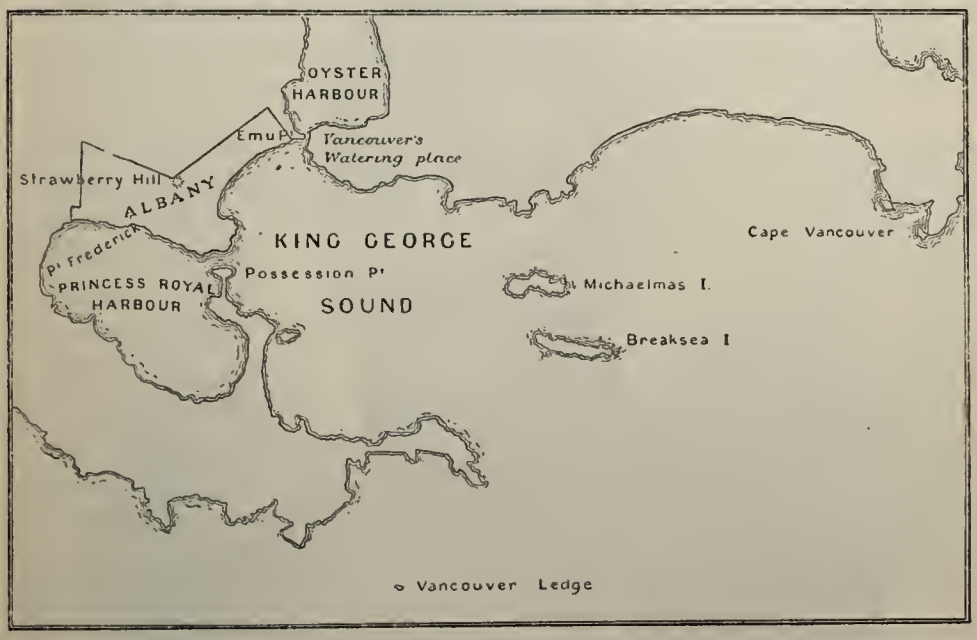


Chart of King George Sound.

> this Government, any division of it which may be supposed to exist under the designation of New South Wales being merely ideal, and intended only with a view of distinguishing the more settled part of the country. Should this explanation not prove satisfactory, it will be proper in that case to refer them to this Government for any further information they may require. But should it so happen that the French have already arrived, you will, notwithstanding, land the troops agreeably to your instructions, and signify that it is considered the whole of New Holland is subject to His Britannic Majesty's Government.

These instructions had been conveyed in almost the same terms to Governor Darling by Lord Bathurst and represented the deliberate intentions of the British Government.

On Christmas Day, 1826, the "Amity" sailed into King George Sound. An examination of the surrounding country

followed, the site of what is now Albany was selected, and Major Lockyer ordered that "until the pleasure of His Excellency the Governor may be made known the site fixed on shall be called Frederickstown, in honour of His Royal Highness, the Duke of York." Huts were erected for the accommodation of the people and the protection of the stores and a flag-staff was raised on a projecting

Major Edmund Lockyer.

point on the beach (since known as Point Frederick) beside which two carronades were mounted, and on January 21, 1827, at sunrise the colours were displayed on the flag-staff. At 12 o'clock a Royal salute was fired by the battery and a *feu-de-joie* by the troops. All this was in fulfilment of the specific instructions given by Governor Darling.

The mere establishment of the convict settlement was of no more importance than the earlier transference of prisoners from Sydney to Melville Island ; but the assertion of British rule over the whole island continent is one of the outstanding landmarks in Australian history. And so to Major Edmund Lockyer belongs a foremost place in the annals of our State. The portrait of him presented herewith was supplied by his son, Sir Nicholas Lockyer, now of Melbourne. Edmund Lockyer was born in Devon in 1784 ; Sir Nicholas is still hale and hearty : the combined lives of father and son cover a period of 145 years !

The maintenance of convicts at Albany being inconsistent with the decision of His Majesty's Government, announced in the Swan River regulations of January 13, 1829, that " no convicts or other description of prisoners be transported to this new settlement," the military and prisoners were withdrawn and the place was transferred to the Swan River Government. In the year 1883 Mr. George Edward Egerton-Warburton compiled a story of " Albany, Past and Present," which has not been published, but which is full of material of absorbing interest. It is compiled largely from the letters of Sir Richard Spencer, the first Government Resident at Albany—a man whose conspicuous services to the Colony have received inadequate recognition.

The Albany settlement did not entirely disappear with the removal of the military and prisoners, but only three thatched buildings remained : clustered about the neighbourhood of the present cricket ground. " Facing the east was the long row of buildings occupied by the commandant, in front of its south end stood the flagstaff, and not far from that a pair of stocks, an institution which seems in those days to have accompanied the British in all their migrations." The labour of the prisoners had been employed in clearing and substantially fencing fertile land near the site now known as Strawberry Hill. Much of the surrounding country had been more or less explored. Dr. Wilson, attached to the service during the residence of the convicts, had made many journeys inland and along the coast and after him Wilson's Inlet was named. Mount Barker was named after Captain Barker of the same service,

an officer in the 29th Regiment, who also gave his name to Mount Barker in South Australia. He was speared by the natives whilst doing survey work on the Murray River in the neighbouring State.

The Settlement, King George Sound, 1827.
Sketch by Edmund Lockyer, Major H.M. 57th Regiment. (Presented to the West Australian Public Library by his son, Sir Nicholas Lockyer.)

With the removal of the convicts Albany languished for four years. What government there was was administered by Lieut. McLeod, of the 3rd Regiment. The little handful of people lived chiefly on fish, and several were employed in sealing. American and French whaling ships made Albany a port of call, and bartered with the residents for kangaroo flesh. "They had an ingenious method of finding water when they landed on a part of the coast with which they were unacquainted: having previously kept their kangaroo dogs for a long time without water they set them on shore and followed them, knowing they were sure to find water if there was any within reasonable distance." They brought into Albany quantities of seal skins of the fur variety and of considerable value.

Stagnation ruled at Albany even more completely than in the Swan River settlement until, on the 19th March, 1833, the Under Secretary of State for the Colonies (Mr. Hay) sent a notification to Sir Richard Spencer of his appointment as Government Resident of King George Sound. So important was the part played by Sir Richard in the development of the southern portion of the Colony, that it is worth while making some inquiry as to what

manner of man he was. At the time of his appointment he was a half-pay captain living near the quaintly beautiful and historically interesting town of Lyme Regis, on the coast of Dorsetshire.

Captain Sir Richard Spencer, R.N., Companion of the Bath and Knight-Commander of the Royal Hanoverian Guelphic Order, was born on December 9, 1779, being the only son of Richard Spencer, a London merchant. At fourteen years of age he was entered as a midshipman on the "Arethusa"—the saucy "Arethusa," famous in naval song and story. A year later he was present at the battle off Ushant, commonly called Lord Howe's Victory, as a midshipman on board the "Leviathan." In 1795, in the "Sanspariel," in the course of a naval engagement he was wounded in the arm and side, and from then until 1797 he served in the "Hornet" sloop of war. In 1798 he was repeatedly in action with the batteries at La Hogue and Havre de Grace, on board the "Cynthia" with the squadron under Sir Richard Strahan. In 1800 he was with the "Minotaur" during the blockade and bombardment of Genoa. When the "Guillaume Tell" was taken from the French he was promoted to the post of lieutenant, and assisted in navigating that shattered ship from Sicily to Minorca. Next he was appointed to the "Chameleon," a brig of 18 guns and commanded one of the gun launches which protected the march of the British Army in Egypt after its landing in Aboukir Bay in March, 1801. For services in that campaign his name was mentioned in the highest praise.

Entering Genoa after the peace of Amiens, and unaware of the renewal of hostilities, he was taken prisoner and, not consenting to give his parole, was confined for months in a stone room without change of clothing and on the most meagre rations. He escaped and was next appointed lieutenant to the "Triumph," and in 1803 Lord Nelson gave him the command of the "Renard" schooner stationed at Malta. In 1805 he distinguished himself by capturing three large French ships and two smaller ones engaged in secret trading with Sicily in order to supply the powder works of Toulon with sulphur. Then he was sent to Algiers to negotiate for the liberty of a number of Maltese captives who had been taken before the island was in the hands of the English. Handsome and costly pieces of plate were presented to him by the inhabitants of Malta for this service. In 1804 he was employed in the destruction of the fortress of Cotrone in Calabria, when he received instructions to follow and harass the remains of the French Navy under General Regnier, who had been defeated by Sir John Stuart at Maida. Lieutenant Spencer carried out this task with great efficiency and intercepted despatches from the Emperor Napoleon Bonaparte to General Regnier. A public letter of thanks for his conduct was the outcome.

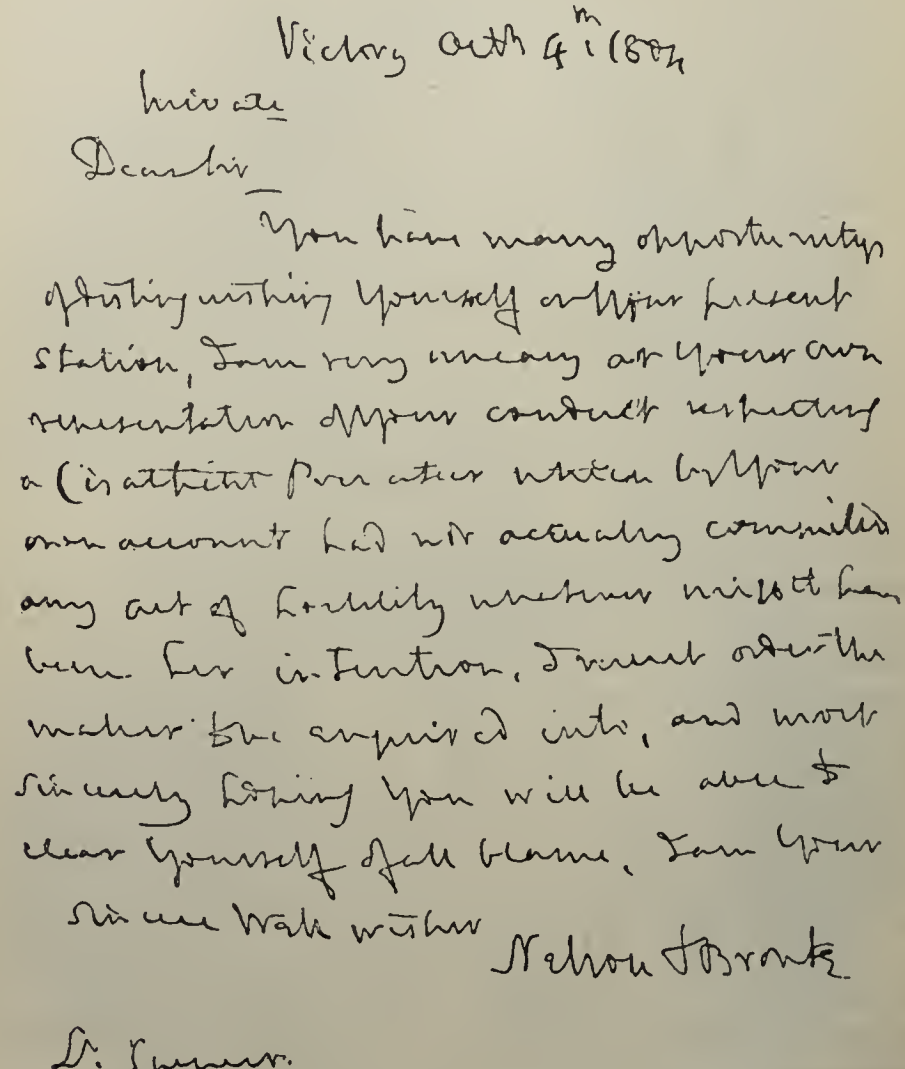
SIR RICHARD SPENCER

In January, 1807, in the face of a tremendous sea, he swam from the shore near Malta to his vessel in order to rescue her from impending disaster, an act described at the time as one of almost unparalleled heroism. March of the same year saw him captured by the Spaniards after receiving a dreadful wound, the effects of which he carried to his grave. In September of the same year, unrecovered of his wound, he sailed to the East Indies as first lieutenant of the "Monmouth," and in 1808 he was promoted commander of the "Samarang," and took part in the capture of Amboyna. He next served in the reduction of the adjacent islands of Saparona, Fluruka, and Noopa Sant, and reconnoitred the island of Banda, making many captures of enemy ships and property. Returning to Madras he was appointed to acting post rank in the "Blanche" and eamed further praise for judicious and gallant conduct. On leaving the "Samarang" the officers and ship's company presented him with a sword of the value of one hundred guineas "as a testimony of their esteem for your fatherly conduct and attention to everything conducing to the health and comfort of the ship's company." In 1812 he was confirmed to post rank and in 1815 he sailed the Mediterranean in the "Erne," remaining in active service until 1817.

Thus for a quarter of a century Richard Spencer's story was the story of the British navy during the period of its greatest glory, and amongst the priceless treasures he brought with him to Western Australia were letters—still extant—from the immortal Nelson, in high praise of his courage and seamanship. He was made a Companion of the Bath in 1815. From 1817—the Napoleonic wars being over and the world at peace—he seems to have lived in retirement on half-pay. In the beginning of 1833 King William IV., in most flattering terms, conferred upon him the honour of the Hanoverian Guelphic Order of Knighthood and in the following month—during the visit of Sir James Stirling to England, and presumably on his recommendation—Sir Richard Spencer was appointed Government Resident at King George Sound.

It is on record that as early as 1829 Captain Spencer was negotiating in London for the purchase of a small vessel to carry himself, his family and his possessions to Australia, intending subsequently to employ the vessel in the Australian intercolonial trade. The project was abandoned because of severe illness, but the longing to emigrate to Australia remained and he welcomed the appointment of four years later as a fulfilment of his long

cherished desire. With his wife and family he took passage in H.M. store ship "Buffalo," much of his belongings being sent out in the "Brilliant." These belongings included


Victory Oct 4th 1804

Private

Dear Sir

You have many opportunities of distinguishing yourself at your present Station, I am very uneasy at your own representation of your conduct respecting a Cisalpine Privateer which by your own account had not actually committed any act of hostility whatever which has been her intention, I must order the matter to be enquired into, and most sincerely hoping you will be able to clear yourself of all blame, I am Your Sincere Well wisher

Nelson & Bronte

Lt. Spencer.

In July, 1804, Spencer, on the schooner "Renard" in charge of a convoy from Malta to Messina, encountered a Cisalpine privateer, which, in defiance of Sicilian neutrality, ran out of Syracuse with the object, as he believed, of cutting off and capturing a part of his convoy. He fired into her and compelled her to run ashore on the rocks of Cape Porche, where she was totally destroyed. This was complained of to Lord Nelson as a breach of neutrality, and in ordering an investigation Lord Nelson wrote to Lieut. Spencer the letter of which the above is a fac-simile. The investigators found that Spencer had properly inflicted a chastisement well merited by repeated violations of neutrality by French and Cisalpine privateers.

(The original of the letter, in Lord Nelson's handwriting, is in possession of Mr. J. Egerton-Warburton, of Kojonup).

a quantity of live stock selected with great judgment from the best breeds in England. In an official letter Sir Richard records that it cost him £1,000 for the freight and landing at Albany of himself, his family, and his possessions.

He reached King George Sound on the 13th September, 1833: a red-letter day in the history of Albany and the south. He at once took up his residence at the house then, and still, called Strawberry Hill. At that time there were in Albany only three houses in addition to those occupied by the various Government establishments: and one of the three was untenanted. Before his arrival the total number of persons in Albany was seventeen, there was only one acre of land under cultivation, no sheep, three cows, three horses, and a few poultry. He brought with him five merino sheep from the flock of Lord Western (probably the best sheep up to that time imported into the Colony) one bull and two heifers of the South Devon breed, one Guernsey cow, two polled Suffolk, and one polled Cumberland cow, one horse, and several mules and asses; also a choice variety of vegetables, fruit trees, pigs, poultry, etc. His family and those who accompanied him totalled 21 persons.

Soon after Sir Richard's arrival the people of the settlement found themselves hard pressed for food. For two months they were entirely without fresh meat, but it is recorded that "the exceeding cheapness and abundance of ardent spirits enabled them to bear their privations with resignation." These partial famines appeared periodically for many years, and seem to have been accepted by the settlers as more or less a matter of course. Even at this early date Albany struck most visitors as a place of great natural beauty: the one notable exception being Charles Darwin, who visiting the port in H.M.S. "Beagle" wrote of it as contemptuously as he did of most other parts of Australia. In May, 1835, several settlers arrived in the "Caledonia" with a few fine-woolled sheep from Tasmania.

As at the Swan River settlement, the unsuitable conditions attached to the taking up of land retarded progress. On the other hand conveniently situated land was locked up

for speculative purposes. In 1837 it is recorded that in the district of Plantagenet the Government had granted 113,222 acres of land to thirty-three individuals not one of whom had taken any steps for its cultivation or placed one hoof of stock upon it, whilst in only one case had the grantee seen his land. With regard to town allotments

Octagonal Church, Albany, 1835.

the Government Resident constantly complained to the authorities at Perth of the inconvenience to which those desirous of acquiring land were subjected, by the length of time that elapsed before applications were dealt with. Extreme supineness on the part of the authorities in exploring for agricultural land in the neighbourhood helped to discourage intending settlers.

In the Albany district little trouble was experienced with the natives. In 1834, through the efforts of Lady Spencer, a fund was raised in England for the supply of clothing to the native women. In March of 1834 the "Merope" arrived from Hobart with sheep and cattle. Sir Richard Spencer purchased 292 of the sheep and established them at Strawberry Hill and on the surrounding sand-hills. At shearing time, eight months later, there were only 76 survivors. In that year flour was selling at £27 per ton or 4½d. per lb. The first public sale of land in Albany was

held in April, 1834. In June of the same year Sir Richard Spencer brought 50 ewes, 10 wethers, and two cows from Sydney, the freight being 20s. each for the sheep, 40s. each for the cows, plus the cost of food on the voyage. In the same month Sir James Stirling returned from England and landed at Albany, being accompanied by a number of new settlers for Albany. The civilian population of the settlement was then 91 with 21 military.

In September of that year an order for supplies was forwarded to Hobart and provoked the reply from a merchant there: "We are for the first time on the brink of a famine, wheat is 20s. per bushel, meat 9d. per lb. Hard cash has disappeared and persons supposed to be rich some months ago are in want of provisions and their debts are undischarged." Not only in Western Australia were the difficulties of pioneering acute! The first reference to unemployment in the district is in October, 1834, when working men complained that they could not obtain employment and work was found for them on the streets. Kangaroo meat was selling at 10d. per lb. and fish at 2d., whilst flour was so scarce that it brought 8d. per lb. and was of bad quality. A month later the position was somewhat relieved and arrangements were made to sell flour from the Government store at 5d. per lb.

In January of 1835 an exploring party under Surveyor General Roe started from Albany for Moorilup and the Hay River, and in March a further examination of the Hay River country was made as a result of which Sir Richard Spencer sent thither the poor remnant of his flock of sheep, reduced to 163. In May of the same year further settlers arrived from Tasmania with a small flock of fine wool sheep. Others were to follow, but were discouraged by the terms of land settlement and by the difficulties Sir Richard Spencer had experienced with his flocks.

An interesting incident in June of the same year was the arrival of Mr. and Mrs. Morley with ten Indian servants from Madras. They were brought out under agreement, made in the police office at Madras, under which the artisans (bricklayers, brickmakers, carpenter, and wheelwright) were to receive 14 rupees per month, and the labourers and

gardeners five to eight rupees per month: equal to less than one shilling per day for the artisans and sixpence per day for the others. In addition they had to be provided with a diet of rice, dhol, ghee, onions, coriander, chili, garlic, cinnamon, and turmeric.

In the following month Sir Richard started the first cultivation of hops at Strawberry Hill. By October it was found that the sheep sent to Hay River were beginning to do well and had increased in number to 225. About this time the Government Resident addressed a forcible letter to the Colonial Secretary, complaining of the lack of facilities for settlement, as a result of which the new arrivals from Tasmania were still without land and intending migrants from that colony had abandoned the enterprise. Land transportation at this time cost £20 per ton for a distance of 30 miles. In July of 1836 the first portion of what became the Albany to Perth road was marked out by Assistant Surveyor Hillman.

Albany, 1929.

An extract from a letter written by Sir Richard at the end of 1836 refers to the unapproachable climate of Albany and to the fact that "everything that can be grown in England comes to greater perfection here. I have Malta blood oranges growing on a tree I brought from the Island

in 1817. I have eaten grapes, currants, raspberries, and gooseberries, all brought from my garden at Lyme Regis." In a letter to a friend in France Sir Richard said:

> You appear to be astonished that I should emigrate, but what could a poor man in England do better to provide for his ten children? Without any exception this is the finest climate in the world, and I have one of the most fertile and beautiful spots, with as fine a crop of wheat as was ever seen ready for harvesting on New Year's Day. We have sea-kale, asparagus, figs, and almonds. This was a wilderness when we arrived, with only seventeen persons in the settlement. Our sheep are thriving, and in the year and eight months since I sent them to Hay River they have trebled in number. Our inhabitants have not increased in number as fast as we might have hoped. A company of rich gentlemen from India with 56 servants were lost at sea: supposed to have foundered in the Bay of Bengal. This was a great check to our advance, but the extraordinary fineness of our climate must ensure the prosperity of the place.

In 1837 it is recorded that wool from the Hay River sheep sold at 1s. 8d. per lb., and in April of that year there were in Albany 45 houses and 180 inhabitants. In December a contract was let for the building of a jetty at Albany. In 1838 there was some trouble with natives spearing cattle at Hay River. In June of that year Sir Richard imported the first stud horse to the district. In August the Western Australian bank opened a branch at Albany. In February, 1839, is recorded the arrival of Mr. J. Hassell in command of the "Dorsen," and the following month he left for the eastern colonies to purchase stock to bring back to the district, having determined to settle there on land which he had purchased to the extent of 20,000 acres. In April fourteen bales of wool were sent to London, chiefly from Sir Richard Spencer's sheep at Hay River.

On the 24th July, 1839, the Government Resident, Sir Richard Spencer, died after an illness of only 48 hours. He had been much more than an official. He introduced live stock of every description and of the highest quality, as well as fruits and vegetables of great variety. In the face of tremendous difficulties he set a wonderful example of enterprise and endurance. He established sheep farming in the district on successful lines, and pioneered the cultivation of the land. At the time of his death there were sixty dwelling houses in Albany, many of them substantial

brick and stone buildings. There was also a ship on the stocks at Torbay in course of construction. He was in very truth the builder of the settlement. Some who lived under his sway called him arbitrary, high-handed, and impatient. He was a naval officer, accustomed to command and to be obeyed.

Letters written by Lady Spencer to friends in England bear eloquent testimony to the acute hardships suffered by the family and settlers from time to time—hardships borne with grim fortitude. Sir Richard himself seems to have been treated with little generosity by the authorities at home. Applications for grants of land, in consideration of the property and persons he had brought out, met with no response. At the first auction sale of land in Albany he bought two lots for £351 10s. Sir Richard's eldest and third sons died shortly after he did. One of his daughters became Lady Grey—wife of Sir George Grey, and another married Mr. G. E. Egerton-Warburton. Lady Spencer, in a letter written on the 14th of August, 1839, gives particulars of Sir Richard's brief illness and death, and adds:

> We have buried him at a short distance from the house in a spot he pointed out not long before his death. It is on a hill at the top of the garden which commands a beautiful and extensive view of the sea. When a ship of war arrives, a flagstaff is to be erected—according to his wish—by English sailors, that the flag under which he has so often fought and bled may wave over his head.

Some fifty years ago a proposal was advanced to remove the remains of Sir Richard and Lady Spencer to a more public place in the Albany cemetery, where most of their children were buried. Nothing came of it. Perhaps it is more fitting that they should lie undisturbed, on the spot on which were centred those wise and patient enterprises that laid the foundation of the town and district of Albany; overlooking the sea, his first love, and on which his heroisms won the praise of the world's greatest sailor.

VII: THE PATHS OF EXPLORATION.

ANY volumes would be needed to tell the story of exploration in Western Australia. The expedition leading to the foundation of the Colony did not penetrate far into the interior. Rounding the Leeuwin on the 2nd of March, 1827, Captain Stirling, in the frigate "Success," stood along the coast and anchored in Gage Roads, opposite Swan River. He ascended the river in boats—"to its source," we are told in the records—but presumably only so far as it was then navigable. Mr. Fraser, the botanist, was with him, and parties were sent out to ascertain the nature of the surrounding country. Stirling says:

> We found the country in general rich and romantic; gained the summit of the first range of mountains, and had a bird's eye view of an immense plain, which extended as far as the eye could reach to the northward, southward, and westward. After ten days' absence we returned to the ship; we encountered no difficulty that was not easily removable; we were furnished with abundance of fresh provisions by our guns, and met with no obstruction from the natives. The verdant appearance and almost innumerable variety of grasses, herbaceous plants, shrubs, and trees, show that there is no deficiency in the three great sources of their sustenance: soil, heat, and moisture.

To the mountains he gave the name of "General Darling's Range," out of compliment to his chief, Governor Darling, in Sydney. He also gave Melville Water in the Swan River, the name it still bears. Soon after the arrival of the "Parmelia" further exploration was undertaken. In July, 1829, Lieutenant Henry, of the "Challenger," set out to discover the source of the Canning River and to examine the country in that direction between the sea and the mountains, and Commander Currie travelled south of the Swan for a distance of about ten miles for the purpose of extending the area available for cultivation.

During November of the same year Lieutenant Preston, of the "Sulphur," and Dr. Collie, made a rough survey of the land adjacent to the coast between Cockburn Sound

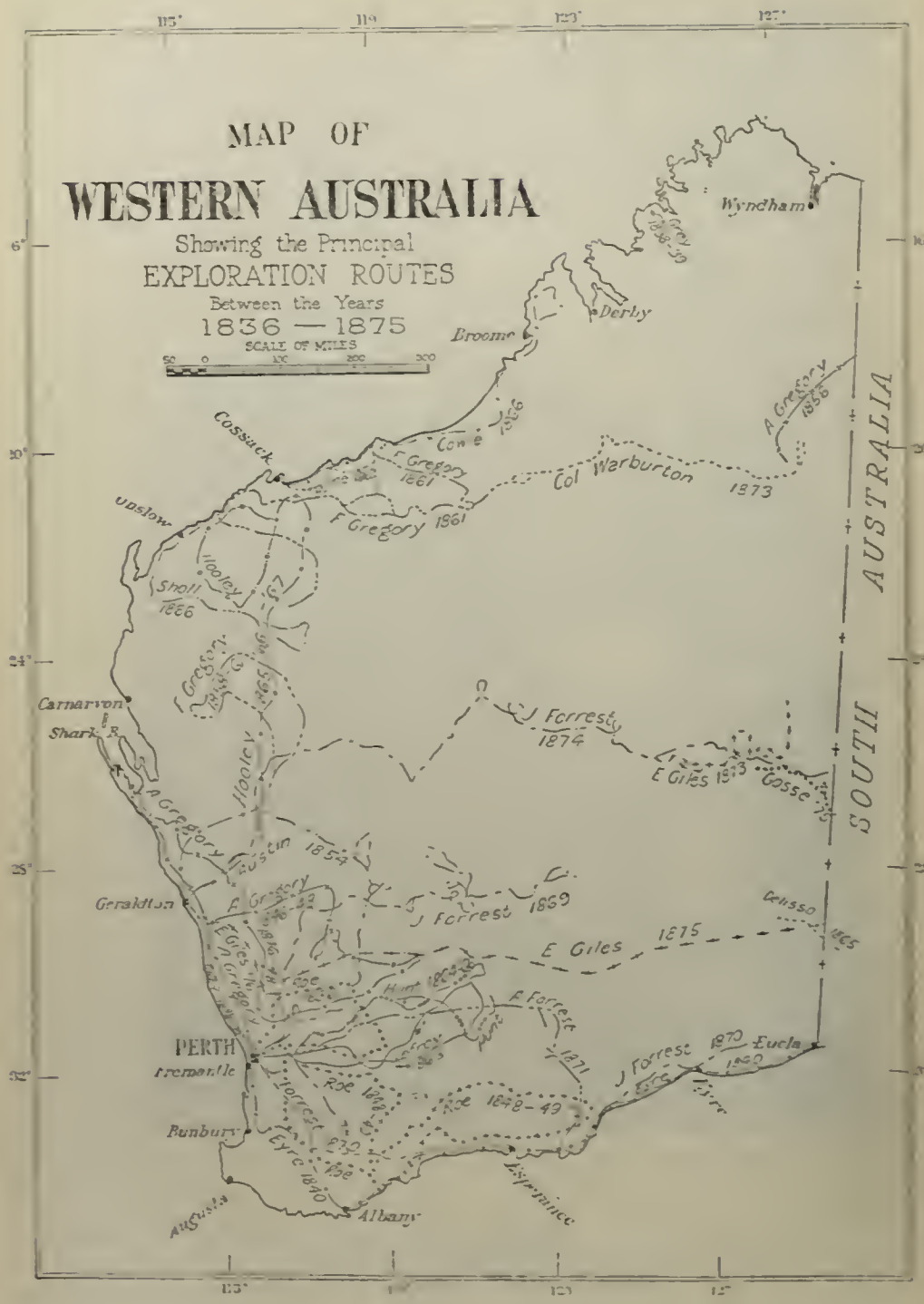
and Geographe Bay. Ensign Dale, of the 63rd Regiment, made two attempts to trace the source of the Helena River, following the stream until it became a mere chain of ponds. In December Dr. Wilson, R.N., started with a small party from King George Sound intending to push through to the Swan River. He discovered the Denmark River and much good agricultural country, returning, after long wanderings through delightful scenery, to his starting point.

With the need of more and more land for settlers, exploratory work was carried further afield. In 1830 the Lieutenant Governor led an expedition southward along the coast, resulting in the establishment of a military station at Port Leschenault, where Bunbury now stands, and in May of the same year he landed at the mouth of the Blackwood in Flinders Bay and marked off the site for the township of Augusta. Ensign Dale and Lieutenant Erskine continued investigations through the ranges further east of Perth. Their reports induced Stirling to make a personal inspection, with the result that further lands were thrown open for selection and the sites of the towns of York, Northam, and Beverley were determined.

1831 saw three expeditions of some importance. Lieutenant Dale conducted a party across the ranges and established the York agricultural district, and Captain Bannister made the first overland journey from Perth to King George Sound. A party under Mr. W. K. Shenton examined the land along the Collie River. 1832 and 1833 were devoted to further surveys of the country within already known areas, such as that made of the Vasse district by J. G. Bussell.

Behind much of this early exploratory work was the directing mind of the Surveyor General of the Colony, Captain John Septimus Roe. He had accompanied Lieutenant King in his voyages of 1818 and 1822 and had a sound knowledge of the coast-line. He led personally many of the more important expeditions undertaken during the first twenty years of settlement, and his administrative duties were second in importance only to those of the Governor.

JOHN SEPTIMUS ROE
The first Surveyor General of the Colony.


MAP OF
WESTERN AUSTRALIA
Showing the Principal
EXPLORATION ROUTES
Between the Years
1836 — 1875
SCALE OF MILES
Wyndham
Derby
Broome
Cossack
Onslow
Carnarvon
Shark B.
Geraldton
PERTH
Fremantle
Bunbury
Augusta
Albany
Esperance
Eucla
Col Warburton 1873
F Gregory 1861
Hooley
Sholl 1866
J Forrest 1874
E Giles 1873
Gosse
Austin 1854
J Forrest 1869
E Giles 1875
Delisso
Roe 1848-49
Eyre 1840
SOUTH AUSTRALIA

THE PATHS OF EXPLORATION

In the accompanying maps an effort has been made to illustrate the principal routes of exploration, dividing the work into two periods: the first from 1836 to 1875, and the second from 1876 to the present day.

Lines on a map can convey but inadequately the story of these adventures. Roe's journey of 1836 was through country now thickly peopled, but presenting in those days difficulties and dangers enough. Grey in 1838 and 1839 went north from Perth to Geraldton and in the same year penetrated the Kimberley country in the neighbourhood of the Prince Regent River. Eyre's solitary expedition from South Australia to Perth along the coast line in 1840 has placed him amongst the immortals. In the forties also were A. C. Gregory's journey to Shark Bay, and a long eastern trip through country many years afterwards regarded as the northern and eastern limit of agricultural settlement. Roe in 1848-9 traversed much of what is now the south-western agricultural belt between Perth and Albany, extending his journey eastward beyond Esperance.

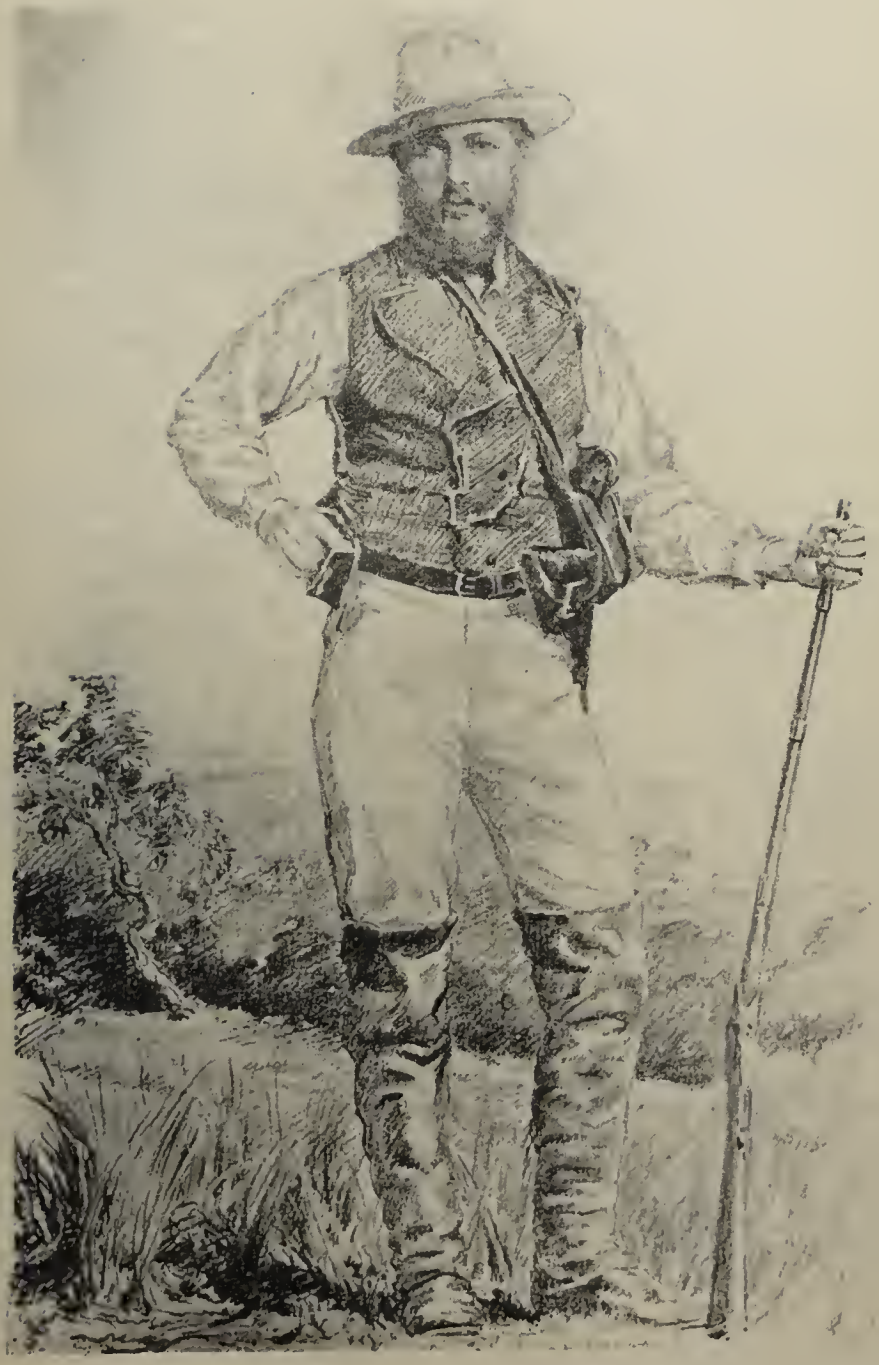
Austin in 1854, starting from Buckland's farm near Northam, made a long and perilous journey to what afterwards became the Murchison goldfield, and examined country round Mt. Magnet and Island Lake Austin which he declared held promise of becoming " the richest goldfield in the world." The later fifties saw much important work by the Gregory brothers, A. Gregory penetrating to the south-eastern corner of the Kimberleys, and F. Gregory traversing much of the now valuable pastoral country inland from Carnarvon.

The sixties were particularly rich in exploratory work in the north-west. F. Gregory, Hunt, Hooley, and Sholl examined much of the country inland from Shark Bay to Roebourne, and Cowle in 1866, pushed his investigations beyond Broome, being the first to explore the south-western corner of the Kimberleys. In the same period Hunt and Lefroy travelled eastward from Perth into the country that afterwards formed the western edge of the great Coolgardie goldfields. Delissa penetrated the Colony from South Australia in 1865. In 1869 a new star shot into the firmament.

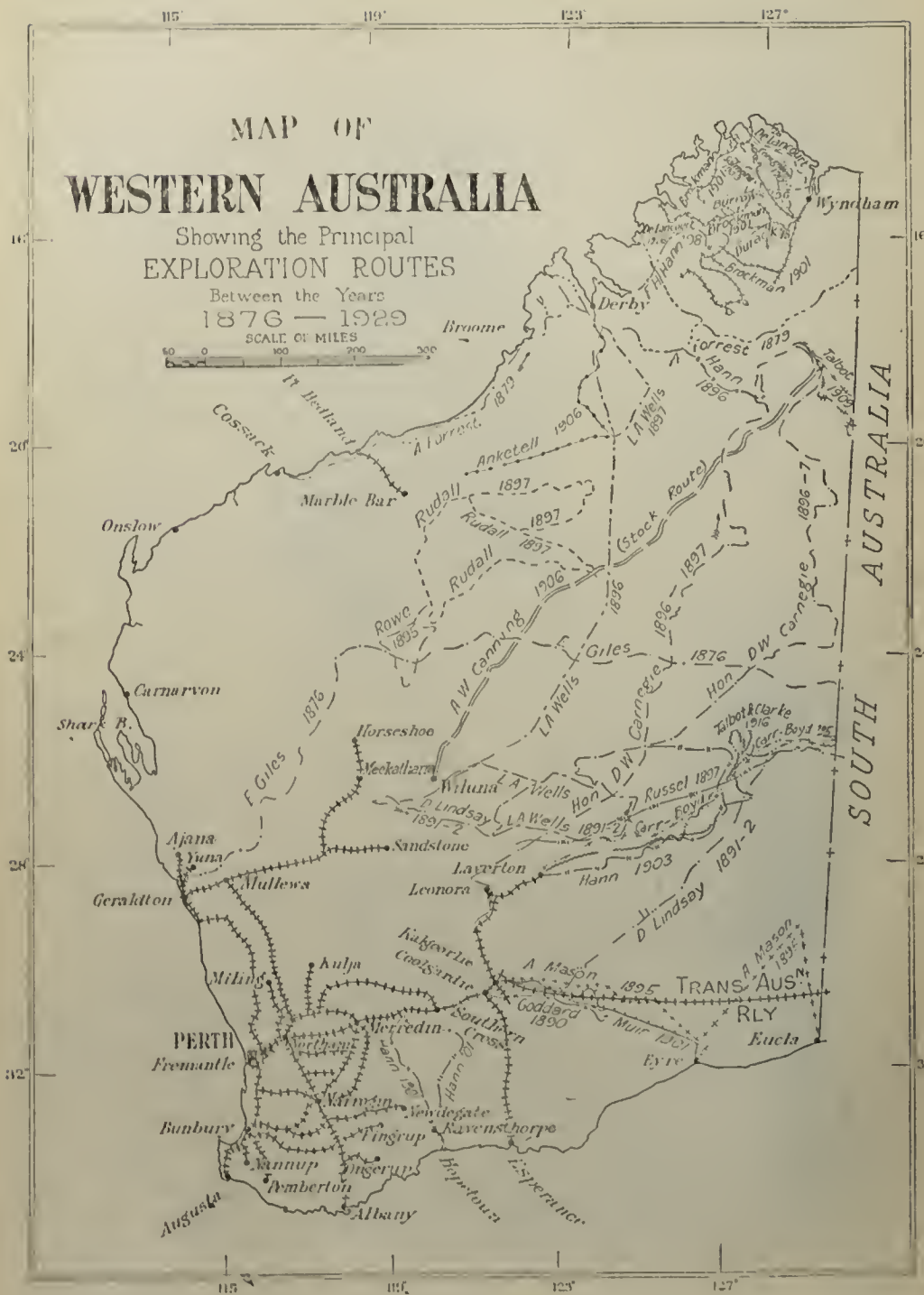
Of necessity the earlier explorations were shorter than those of later years. Each traveller accumulated knowledge that made things easier for his successor, but, this notwithstanding, the magnitude of John Forrest's work dwarfed all that had gone before. His first expedition in 1869—undertaken primarily in search of the remains of Leichhardt—penetrated much further into the interior of the Colony than had any of his predecessors. He discovered and named Lake Barlee, and Mounts Ida, Leonora, Malcolm, and Margaret, and traversed over 2,000 miles of country: most of it previously unknown. He was then in his twenty-second year. In the following year, with his brother Alexander, Forrest essayed, in the opposite direction, the journey Eyre had taken thirty years before, and in the face of almost incredible hardships succeeded in crossing the southern portion of the continent, from Perth to Adelaide, in five months.

In 1871 Alexander Forrest led a party in search of pastoral country out east beyond where is now Kalgoorlie, and thence south to Esperance, and in 1873 Colonel Warburton journeyed from Alice Springs in the north of South Australia to the De Grey station in Western Australia. In the same year Ernest Giles, also starting from South Australia, examined much of the country around the Tomkinson Ranges, near the border of the two colonies, and two years later William Christie Gosse, Deputy Surveyor General of South Australia, came over the border at about the same point.

In March, 1874, John Forrest—again accompanied by his brother Alexander—started on his third great expedition eastward. His official instructions were to obtain information regarding the country in the vicinity of the Murchison, Gascoyne, Ashburton, De Grey, Fitzroy, and other rivers, afterwards proceeding eastward at his own discretion. The first portion of the task accomplished, they turned their faces to the east, and after passing Weld Springs journeyed through spinifex country so sparsely watered that often a return seemed inevitable. Only indomitable courage held them to their course. They crossed the tracks of Giles and journeyed on by way of the Peake station to Adelaide, where they arrived in November:



JOHN FORREST
After his second expedition in 1870. Aged 23 years.


MAP OF
WESTERN AUSTRALIA
Showing the Principal
EXPLORATION ROUTES
Between the Years
1876 — 1929
SCALE OF MILES
SOUTH AUSTRALIA
Wyndham
Derby
Broome
Pt Hedland
Cossack
Marble Bar
Onslow
Carnarvon
Shark B.
Horseshoe
Meekatharra
Wiluna
Sandstone
Ajana
Yuna
Geraldton
Mullewa
Leonora
Laverton
Kalgoorlie
Coolgardie
Kulja
Miling
PERTH
Fremantle
Northam
Merredin
Southern Cross
Narrogin
Newdegate
Ravensthorpe
Bunbury
Pingrup
Nannup
Ongerup
Pemberton
Albany
Augusta
Hopetoun
Esperance
Eucla
Eyre
TRANS AUS. RLY
Brockman 1901
Forrest 1879
Hann 1896
Talbot 1909
L A Wells 1897
Anketell 1906
Rudall 1897
Rudall 1906
Rowe 1895
A W Canning 1906
(Stock Route)
Giles 1876
D W Carnegie 1896-7
Hon D W Carnegie 1896
Talbot & Clarke 1916
Carr-Boyd 1905
Russel 1897
D Lindsay 1891-2
L A Wells 1891-2
Hann 1903
A Mason 1895
Goddard 1890
Muir 1901
Hann 1900
115°
119°
123°
127°
16°
20°
24°
28°
32°

seven and a half months after their departure from Perth. A remarkable feature of this journey is that it was undertaken with horses through country in which it had been declared impossible for horses to live, because of the absence of water and feed. Starting with eighteen horses Forrest had twelve left when he reached Adelaide.

In 1875 Giles, using camels, and adopting a more southerly route, crossed overland from South Australia to Perth. The interior of the Colony to its eastern border had thus been examined at several points, and all its explorers were agreed that it was a sandy desert, unfit for settlement.

Turning to the second illustrative map it will be noticed that the scene of major operations is transferred from the south-western and north-western portions of the Colony to the eastern districts and the Kimberleys. Giles' return trip to South Australia from Geraldton, in the beginning of 1876, and Alexander Forrest's expedition through the Kimberleys, in 1879, were of outstanding importance, the latter leading almost immediately to pastoral settlement in the far north.

The search for auriferous or pastoral country was the dominating motive of most of the later explorations, and many of them had important results. A. W. Canning's opening of the stock route from the Kimberleys to Wiluna is noticeable amongst the achievements of the present century.

There is still much of this great State of a million square miles that has not been subjected to detailed examination, but exploration in the true sense has been completed. As the accomplishment of a century's effort it represents no mean achievement, and generations yet unborn, gathering the fruits of their high endeavours, will hold in reverence the names of those who, at the price of extreme peril and acute privation, equipped the State with the knowledge necessary to its development.

VIII: A POLITICAL RETROSPECT.

ESTERN AUSTRALIA as a political entity commenced on the 5th of February, 1829—the day before the "Parmelia" sailed from Spithead—when the Lords Commissioners of the Treasury handed to Captain Stirling coin to the value of £1,000. An entry of this amount opens the Colony's first balance sheet. Three days later at Portsmouth Captain Stirling drew Bill of Exchange No. 1 on the Lords Commissioners of the Treasury for the sum of £60 3s. 9d., "to make advances at Portsmouth to the artificers Smith, Hokin and Davies." On April 29, at Table Bay, Treasury bill No. 2 for £41 15s. was drawn in payment to Borrowdale & Co. for sundries purchased by them on behalf of the Government. The first bill drawn after arrival in Western Australia was for £68 18s. 9d., in favour of Captain Fremantle, for fatigue money due to the men of His Majesty's ship "Challenger." On September 7 three Treasury drafts were issued: one in favour of Captain Rutherford, for £555 2s. 6d., in payment of stock and sundries brought to the Colony on behalf of the Government; one in favour of J. H. Luscombe, for £200, on account of a charter party entered into with him to proceed for stock to Sourabaya; and one to Richard Sholl, for £1,000, for the purchase of stock in Sourabaya.

Governor Stirling closed his first balance-sheet at the end of the September quarter, 1829, the last entry on the receipts side being: "Fees for permission to reside, £9." The receipts up to September 30—consisting chiefly of coin and bills of exchange on the Lords Commissioners of the Treasury—amounted to £3,121 18s. 11d. The expenditure for the same period—including the monthly salary abstract of about £130—was £2,961 2s. 4½d., leaving a balance of £160 16s. 6½d. to carry forward to the following quarter.

Receipts

1829			£	s	d
Feb.	5	Cash from the Lords Commissioners of the Treasury	1000	0	0
	8	Bill of Exchange N° 1 on the Lords Commissioners of the Treasury to make advance at Portsmouth to the Artificers Smith Hobler and Davies ..	60	3	9
April	29	Treasury Bill No 2 in payment to Bonsdale & Co. of Sundries purchased by them on Account of Government	41	15	3
August	23	Treasury Dft N° 3 in favor of Captain Fremantle for fatigue Money due to the Men of His Majesty Ship Challenger	68	10	9
September	7	Treasury Draft N° 4 in favor of Captain Rutherford in payment of Stock and Sundries bought here on Account of Government	555	2	6
	7	Treasury Dft N° 5. in favor of J H. Luscombe to Account of a Charter Party entered into with him to proceed for Stock to Sourabaya	200	0	0
		Treasury Dfts No 6 to 15 in favor of Richard Sholl for the purchase of Stock at Sourabaya . .	1000	0	0
			£	2926	0	3

Fac-simile of the first page of Captain Stirling's cash book. The £1,000 mentioned in the first line, consisted of £600 in British silver coin; £200 in British copper coin; and 829 ounces 7 dwts. of Spanish dollars, to the value of £200. Thus one-fifth of the total was in Spanish currency.

For the year 1829 the receipts totalled £4,273 12s. 7d. Amongst the payments in the first year was one to Lionel Samson, for planks, £23 15s. 5d., and one to George Leake, for spars, £5. The disbursements amounted to £3,769 4s. 3¾d., so that the first year ended with a surplus of £504 8s. 3¼d. The estimate of receipts and expenditure a century later makes an interesting contrast :—

	Receipts.	Expenditure.	Surplus.
1829	£4,273 12s. 7d.	.... £3,769 4s. 3¾d.	.... £504 8s. 3¼d.
			Deficit.
1929 (estimated)	£10,223,000	.... £10,317,000	.... £94,000

The accounts for 1830 indicate that Mr. Sholl did not expend the whole of the £1,000 advanced to him for the purchase of stock at Sourabaya, since on the 30th of January he returned £308 4s. 4d. An interesting entry on the 17th January relates to the payment to Henry Trigg of

The Colony's first Government Office.

£40 in cash and £150 in bills for the building of Government offices. On February 9 the Governor received the first parcel of local notes for issue : 25 of £1 each ; twenty of £5 each, and ten of £10 each. On the following day twenty more £5 notes and ten more £10 notes were received, and in the following month thirty-nine £1 notes, twenty £5 notes, and ten £10 notes. As the year proceeded the practice of issuing local notes became more general, and by the end of 1830 the total amounted to £5,216.

Two disbursements for freightage make interesting reading: Paid to J. H. Luscombe, freightage account as per charter party for a voyage performed by the "Parmelia" from Cockburn Sound to Sourabaya and back, £2,048 12s. 7d.; and paid Captain Hobbs freightage account as per agreement for a voyage from this port to Van Diemen's Land and back, £752.

The year 1830 ended with a credit balance of £4,271 15s. 11¼d., and noteworthy amongst the entries are the first payment in respect of the expenses of "the Colonial hospital," £38 18s. 3d., on July 26, payments to John Cleland as Acting-Schoolmaster at £4 per month, several payments of about £100 per month to "the needy settlers' loan account," and payments of salaries to Captain Whitfield, Government Resident at Guildford (October 28), and Captain Bannister, Government Resident at Fremantle (December 18). There were also disbursements to Mr. John Perriain for laying down buoys in the channel leading into Cockburn Sound; and for fatigue pay to "two soldiers attached to the Colonial Botanist," to which office Mr. Drummond had been appointed.

In 1831 the transactions of Government became more extensive and many new activities were embarked upon. There were frequent and considerable payments to the Government boat-builder; a payment of £1,202 to Mr. Reveley, the Civil Engineer, on account of the building of Fremantle gaol; payments to the Government Resident at Kelmscott "for services from September to December, 1830"; payments to Mr. W. K. Shenton and Mr. Macfaull for inserting the Government notices in the Perth *Gazette* and the Fremantle *Observer*, the first notice in the former paper being on the 19th of February.

By far the most significant disbursements of the period were payments to destitute persons totalling £69 11s. 7d., and a very large number of "loans to settlers," varying in amounts from a few shillings to nearly £400 and aggregating about £3,300. Relatively these operations equalled in importance the advances of the Industries Assistance Board in recent years. The year closed with a credit balance of only £146 12s.

In the accounts for 1832 it is only necessary to refer to two items, each suggesting the establishment of additional and essential services: a payment to R. Lyon for the conveyance of mails, and to W. H. Mackie, chairman of the Quarter Sessions, "expenses incurred by him in attending the Fremantle Bench for a period of eighteen months, £100."

At the outset the machinery of government was simple. Captain Stirling as Lieutenant-Governor had supreme authority. He was assisted by the Board of Counsel and Audit established when the "Parmelia" was nearing Fremantle, and by the officials enumerated in an earlier chapter. But his responsibility and power were complete. On November 1, 1830, an Order in Council was issued by the Secretary of State for the Colonies bringing the settlement into line as a Crown Colony and constituting the Governor, the senior military officer next in command, the Colonial Secretary, the Surveyor General, and the Advocate General, a Legislative Council. On the powers of this Council two limitations were placed: no law or ordinance could be passed that was not first proposed by the Governor, or officer administering the government, and provision was made for disallowance by the Secretary of State. This Order in Council was sent from England on April 28, 1831, accompanied by the formal commission to Captain Stirling as Governor and Commander in Chief.

The first meeting of the Legislative Council was held in January, 1832, and its principal business was the establishment of a Civil Court, of which Mr. George Fletcher Moore was appointed Commissioner. The first jury case was tried in June of that year. The acute difficulties of the settlers and the serious limitation of the powers of the Legislative Council led to the presentation of a memorial to the Governor asking him to proceed to England and lay the position before the home authorities. He agreed, and sailed in the "Sulphur" on August 12, Captain Irwin being left in charge as Lieutenant-Governor.

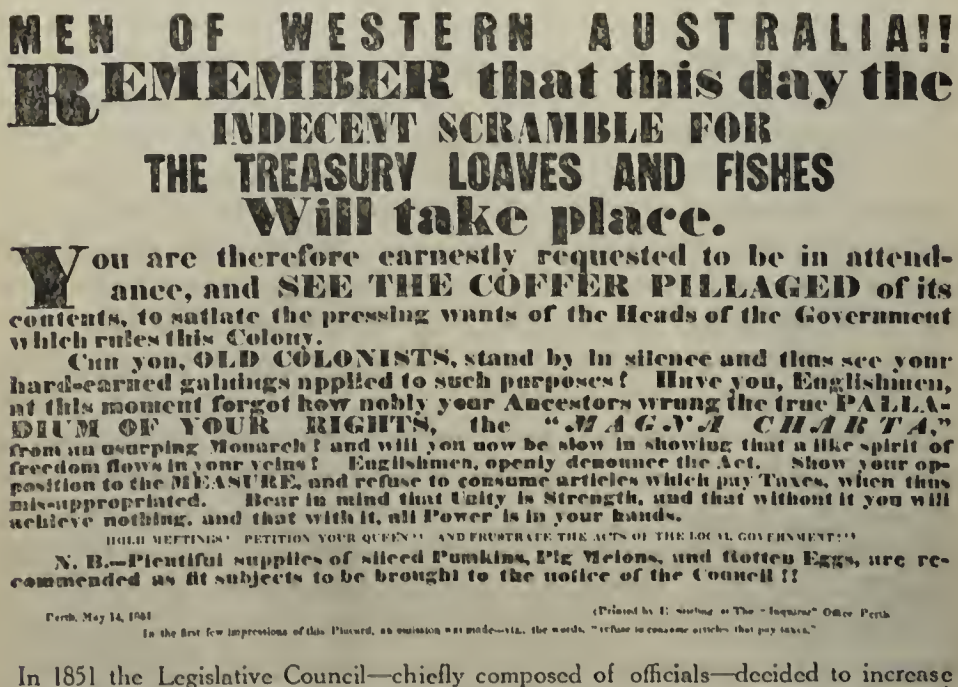
In June, 1834, the Governor returned. He brought permission that the Legislative Council might be increased by four unofficial members nominated by the Governor, and that the sessions might be open to the public. Keen

disappointment was expressed at the inadequate nature of these reforms: particularly at the failure to allow the settlers to elect the unofficial members. Feeling was so strong that the nomination of the additional members was withheld. Governor Stirling—either as a matter of personal opinion or in loyalty to the wishes of the home authorities—opposed the aspirations of the colonists for elective members, thus impairing his popularity during the remainder of his administration, which closed at the end of 1838.

After the lapse of a hundred years it would be recklessness to attempt to measure the indebtedness of Western Australia to Stirling's colonising enthusiasm. In modern company promotion it is customary to assess the *bona-fides* of the vendor by his willingness to sink or swim according to the result of the venture. Speaking in the vernacular, it is the acid test. Stirling was awarded a considerable grant of land in the Swan River settlement. There is positive evidence that he did not exercise his privilege of selection to the detriment of others. He was always ready to go a little further out. At no time could there have been any considerable appreciation in the value of his land without three-fold advantage to the colonists generally. In the arrangements for his passage the Colonial Office displayed an amazing parsimony. He was required to pay—according to documents still preserved amongst the records in the Colonial Secretary's office—" for the passage of yourself and your family and for the conveyance of your furniture in the 'Parmelia' from England to Swan River, the sum of £227 14s., and the Commissioners of the Navy have, in consequence, placed an imprest of this amount against your half-pay until you shall have paid the sum to the Treasury of the Navy." The account was based on the passage of ten adults at £9 18s. each; one child at £4 19s., and twenty-five tons of furniture at £4 19s. per ton. For the first two years Stirling received no salary. He staked his all—wealth and reputation alike—on the success of the enterprise, and his material reward was in no way commensurate with his services.

Governor Hutt in January, 1839, put into operation the plan approved by the home authorities five years before,

and nominated to the Legislative Council Messrs. William Locke Brockman, George Leake, Thomas Peel, and William Tanner, the term of office being the duration of their residence in the Colony. The opposition of the colonists to the nominee system continued and was intensified by dissatisfaction in regard to land regulations. About the middle of the year a public meeting in Perth appealed for the right of the colonists, in case of a vacancy in the Council, to select a member from the list approved by the home authorities. Nothing was done. Succeeding years saw changes in the personnel of the Council but not in the method of its construction.



MEN OF WESTERN AUSTRALIA!!

REMEMBER that this day the

INDECENT SCRAMBLE FOR

THE TREASURY LOAVES AND FISHES

Will take place.

You are therefore earnestly requested to be in attendance, and **SEE THE COFFER PILLAGED** of its contents, to satiate the pressing wants of the Heads of the Government which rules this Colony.

Can you, **OLD COLONISTS**, stand by in silence and thus see your hard-earned gainings applied to such purposes? Have you, Englishmen, at this moment forgot how nobly your Ancestors wrung the true **PALLADIUM OF YOUR RIGHTS**, the "*MAGNA CHARTA*," from an usurping Monarch? and will you now be slow in showing that a like spirit of freedom flows in your veins? Englishmen, openly denounce the Act. Show your opposition to the **MEASURE**, and refuse to consume articles which pay Taxes, when thus mis-appropriated. Bear in mind that Unity is Strength, and that without it you will achieve nothing, and that with it, all Power is in your hands.

HOLD MEETINGS! PETITION YOUR QUEEN!! AND FRUSTRATE THE ACTS OF THE LOCAL GOVERNMENT!!!

N. B.—Plentiful supplies of sliced Pumkins, Pig Melons, and Rotten Eggs, are recommended as fit subjects to be brought to the notice of the Council!!

Perth, May 24, 1851 (Printed by E. Starling at The "Inquirer" Office Perth

In the first few impressions of this Placard, an omission was made—viz. the words, "refuse to consume articles that pay taxes."

In 1851 the Legislative Council—chiefly composed of officials—decided to increase the salaries of all officials from the Governor downwards. The above placard was issued from the *Inquirer* office on May 24 of that year.

The Imperial Act of 1850, making provision for representative government in the Australian colonies generally, on the basis of a Legislative Council one-third nominated and two-thirds elective, was not availed of, because of the condition that the colonists should be prepared to pay all the expenses of government out of the colonial revenue. During Governor Fitzgerald's term of office the agitation

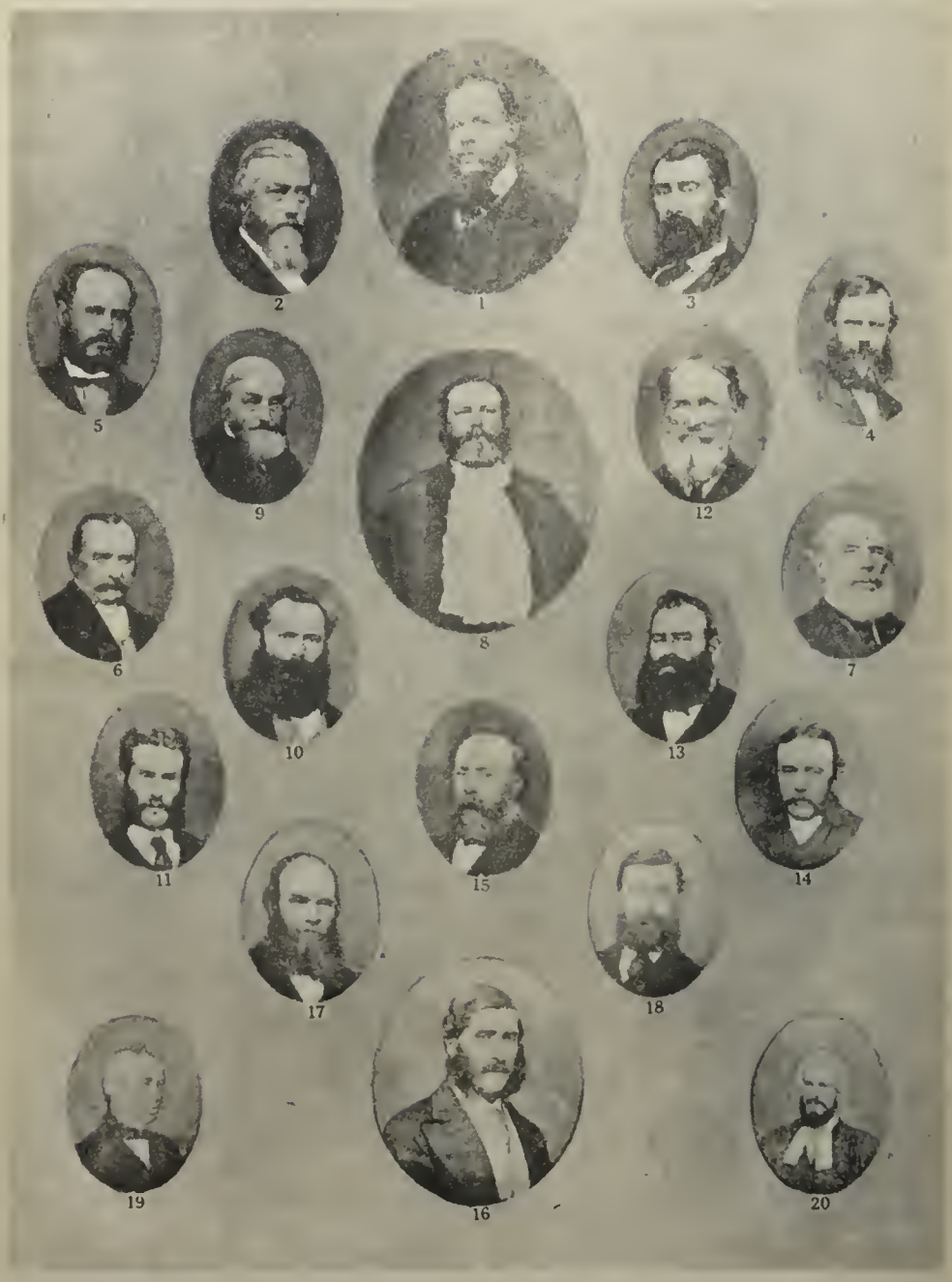
for some form of representative government continued and it was vigorously renewed in Governor Kennedy's administration, but without success.

It was not until 1867 that the Duke of Buckingham signified the assent of the Crown to a proposal by the Legislative Council to appoint non-official members equal in number to the official members, and with a tenure limited to three years. As the result of a public meeting held in October of that year it was arranged that the people should themselves elect the unofficial members: six in number. All free males of adult age had the right to vote, and the elections resulted in the return of J. G. C. Carr (Perth), W. Bateman (Fremantle), W. L. Brockman (Guildford and the Swan), J. G. Lee Steere (Murray) and E. Hamersley (Eastern districts). The Champion Bay settlers refused to take part in a ballot, and Governor Hampton selected J. W. Hardey as their member.

These six names were approved by the Secretary of State, and on July 7, 1868, the Legislative Council was constituted. It functioned for two years, during which steps were taken for the adoption of representative government under the Imperial Act of 1850. These were completed by the middle of 1870 (under Governor Weld's administration), and on July 18, 1870, writs were issued for the election of twelve members, Perth and Fremantle to return two each and the remaining eight electorates one each. The election resulted:—

Perth: J. G. C. Carr and L. S. Leake.
Fremantle: E. Newman and W. D. Moore.
Swan: T. C. Gull.
Albany: John McKail.
York: J. H. Monger.
Geraldton: Major Logue.
Greenough: George Shenton.
Toodyay: James Drummond.
Wellington: Jas. G. Lee Steere.
Vasse: J. G. Bussell.

The three official nominees were the Colonial Secretary, Mr. F. P. Barlee, the Surveyor General, Mr. Fraser, and the Attorney General, Mr. R. J. Walcott, the unofficial nominees being Messrs. S. P. Phillips, M. Brown, and W. E. Marmion. In the choice of the elected members every



THE FIRST LEGISLATIVE COUNCIL UNDER REPRESENTATIVE GOVERNMENT

MEMBERS OF THE LEGISLATIVE COUNCIL OF WESTERN AUSTRALIA, 1872.

Photographed by A. Chopin, Perth.

1. The Hon. F. P. Barlee, Colonial Secretary.
2. The Hon. R. J. Walcott, Attorney General.
3. The Hon. M. Fraser, Surveyor General.
4. J. H. Monger, Esq., member for York.
5. W. E. Marmion, Esq., Nominee member.
6. W. Bickley, Esq., Nominee member.
7. James Drummond, Esq., member for Newcastle.
8. Luke S. Leake, Esq., member for Perth, the Speaker.
9. A. P. Bussell, Esq., Nominee member.
10. E. Newman, Esq., member for Fremantle.
11. T. C. Carey, Esq., member for the Vasse.
12. W. L. Brockman, Esq., member for the Swan.
13. W. S. Pearse, Esq., member for Fremantle.
14. A. Y. Hassell, Esq., member for Albany.
15. J. G. C. Carr, Esq., member for Perth, Chairman of Committees.
16. J. G. Lee Steere, Esq., member for Wellington, Leader of the Opposition.
17. M. Logue, Esq., member for Geraldton.
18. G. Shenton, Esq., member for Greenough.
19. Mr. Hillas, Usher.
20. E. A. Stone, Esq., Clerk.

adult male was entitled to vote, provided he possessed property worth £100, was a householder paying £10 a year rent, or held a depasturing license. The qualification of a member was the possession of property of the capital value of £2,000 or the annual value of £100, and the term of office for both nominated and elected members was five years. Mr. Luke S. Leake was elected Speaker, and Mr. J. G. C. Carr Chairman of Committees.

The Colonial Secretary was the Leader of the Government and had the support of the nominated as well as the more conservative of the elected members, whilst Mr. Lee Steere led the democratic Opposition. One of the earliest of the important measures passed by the new body was the Municipalities Act of 1871, under which were proclaimed the municipalities of Perth, Fremantle, Guildford, Albany, Bunbury, Busselton, Geraldton, and York. Perth then had a population of about 4,500.

Representative government was never accepted as anything more than a step towards responsible government. Governor Robinson in his first term (1875-77), Governor Ord (1877-80), and Governor Robinson in his second term (1880-83) discouraged any attempt at progress in that direction. In 1874 Mr. Lee Steere moved a resolution in the Legislative Council favouring responsible government, but it was not carried. In 1878 Mr. (afterwards Sir) S. H. Parker introduced a Bill for the amendment of the Constitution. This was negatived, though in that year provision was made for the appointment of two unofficial members to the Executive Council—a reform not actually introduced until six years later.

The 1880 elections to the Legislative Council were fought to some extent on the issue of constitutional amendment, and subsequently, at Mr. Parker's instance, an address was presented asking the Governor to obtain from the Secretary of State the conditions upon which autonomy would be granted to the Colony. In 1877 voting by ballot had been first adopted, and in 1882 the membership of the Legislative Council was increased to 24.

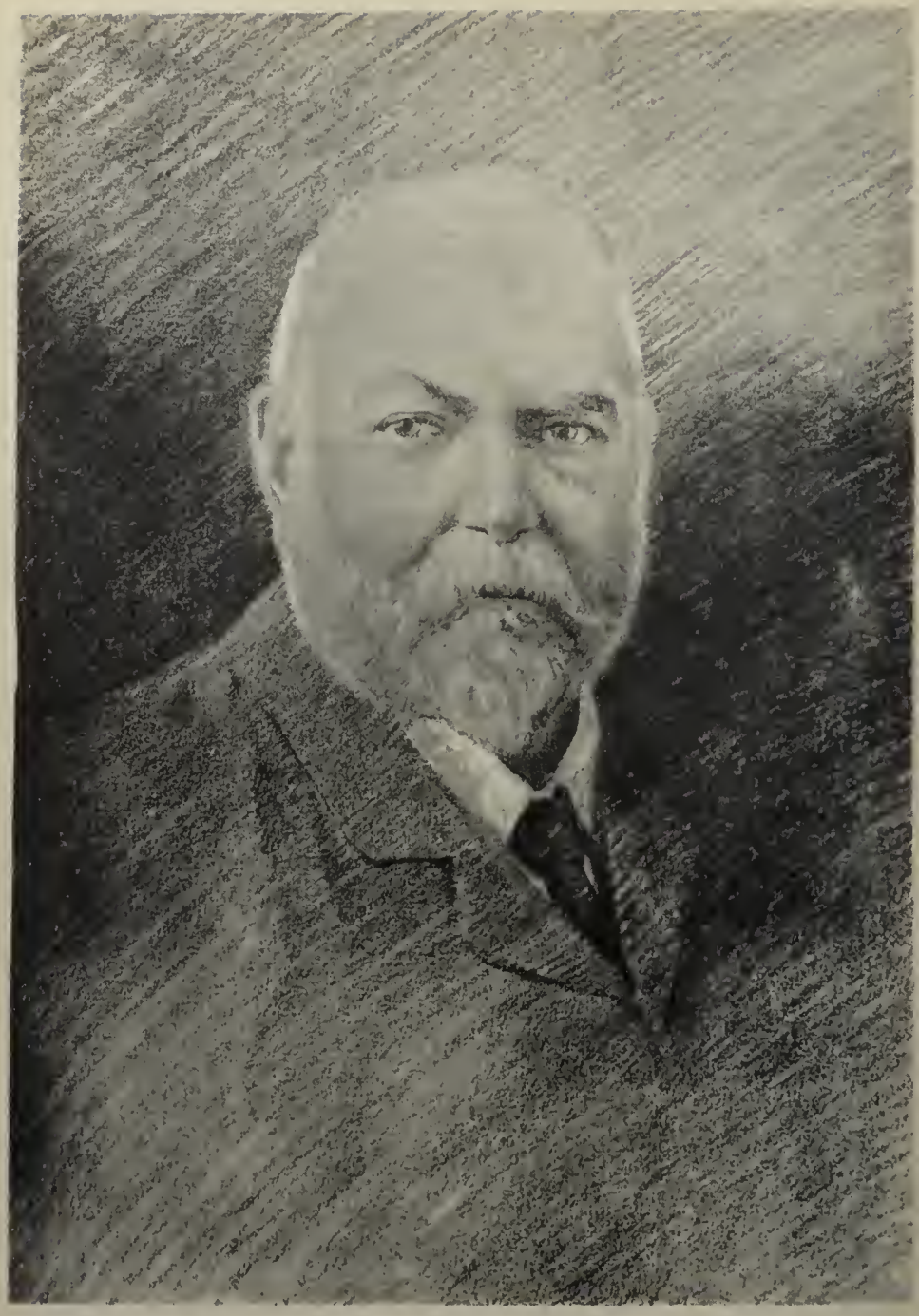
The long struggle for responsible government continued, Mr. Parker remaining the leader of the movement. By

1886 Governor Broome felt justified in telling the Secretary of State that the cause was gaining ground, and in reply it was intimated that the handful of people in the south could not expect to be given control over the whole territory. A division of Western Australia was suggested. In the following year Mr. Parker presented to the Legislative Council a petition asking for responsible government, and a resolution supporting it was carried, together with a very definite expression of opinion that Western Australia should remain one and undivided under the new Constitution.

The principle of responsible government having been accepted, debate was concentrated on certain details: Should there be one House or two? If two, should the Upper House be nominated or elected? Should the authority of the new Colony extend over the northern lands of the State? Was there need to place the control of the aborigines under a body independent of the Colonial Ministry? The colonists knew what they wanted and in the end got it.

When the Constitution Bill reached London it was quickly passed by the House of Lords, but hung up in the Commons, where bitter and unexpected opposition developed. To meet this the Legislative Council wisely decided to send a delegation to England, consisting of the Governor (Sir Frederick Broome), Sir T. Cockburn-Campbell, and Mr. S. H. Parker. So well did they do their work that all hostility was broken down. It was agreed that there should be two Houses, and that the Upper Chamber should be first nominated, but elected after a period of six years, or earlier if the population of the Colony reached 60,000. Unrestricted control was given over the whole of the lands of Western Australia, and the question of the protection of the aborigines was settled by compromise, satisfying the qualms of Exeter Hall without impairing the sovereign rights of the new Colony.

The qualification for members of either House was the possession of freehold in lands or tenements to the capital value of £500, or annual value of £50. Electors to the Legislative Council were limited to freeholders of £200



BARON FORREST OF BUNBURY, P.C., G.C.M.G., LL.D., F.R.G.S., F.G.S., F.L.S.,
KT. OF THE ORDER OF THE CROWN OF ITALY.

Born near Bunbury, Western Australia, August 22, 1847. Died at sea near Sierra Leone on his way to England, September 4, 1918. Buried in Karrakatta Cemetery, Western Australia. He was the only Australian ever raised to the British Peerage.

capital value and householders or leaseholders of £30 annual value. For the Legislative Assembly every adult male was entitled to vote who possessed within his electoral district for at least one year prior to registration a freehold of the value of £100 or a leasehold or license of the annual value of £10, or occupied a dwelling or lodging of the annual value of £10. There were the usual restrictions regarding nationality and legal incapacity.

Sir William Robinson, appointed for his third term as Governor, was entrusted with the task of inaugurating responsible government. Who should be the first Premier? Popular opinion was divided between Mr. S. H. Parker and Mr. John Forrest (afterwards Sir John, and ultimately Lord Forrest). The Governor wisely refrained from making any choice, leaving the matter to the electors. They returned a majority of members supporting Mr. Forrest who, on December 22, 1890, was commissioned to form a Government.

The ten years of his administration constitute the most memorable period in the whole century of West Australian development. It witnessed a four-fold increase in population—from 46,000 to 180,000—and saw an expansion in public revenue from £400,000 to nearly three millions per annum. Some folks say that Forrest was lucky:

> You never can get fools to understand
> How luck and merit still go hand in hand.

There had been several discoveries of gold in the State before Southern Cross was heard of; and it is open to conjecture how far that find would have been exploited had Western Australia remained under the dominance of Downing Street.

Forrest's main qualifications for leadership—illustrated in his earlier exploring enterprises—were a burning patriotism for the land of his birth; unshakable confidence, resulting from personal knowledge of its qualities; and courage, steadfast and absolute. These gave him the unquestioning following always at the command of a positive leader: the man "who knows that he knows." There was gold at Southern Cross: facilities must be provided for working it. A railway was rushed out from

Northam. The confidence of the Government inspired a like feeling in investors abroad. Money was available for prospecting and development. The lure of gold drew men of knowledge, of enterprise, of resource from the four corners of the world. Coolgardie and Kalgoorlie followed. Water was needed: it must be found. Perhaps no other man could in such circumstances have commanded the support locally and in London that made possible the great Coolgardie water scheme—committing a population of 140,000 people to an expenditure of nearly three millions of money on the most ambitious engineering venture of its kind then known to the world, and on the speculative hazard of a goldfield.

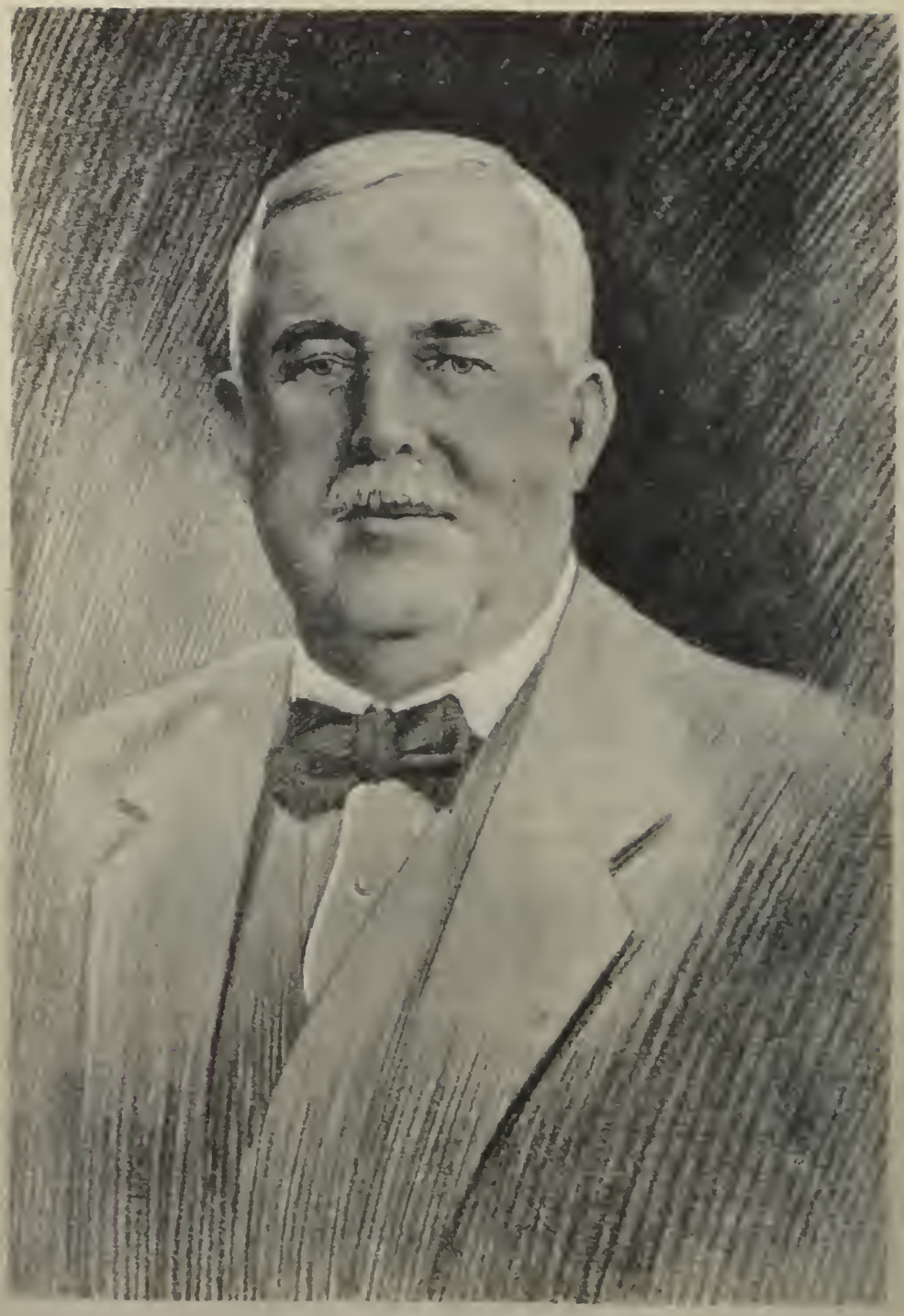
Parliament House—as it is.

Growing trade and population demanded improved shipping facilities, and Fremantle was converted into a great port. Railways were extended in all directions. It was a decade of amazing progress. Money was borrowed extensively and spent wisely, so that no loan became a burden upon the community. There was a broadening of political power, and a wise extension of educational opportunity. Seldom has there been a happier juxtaposition of the moment and the man; the moment delayed through long years of travail until complete ripeness; the man fashioned for greatness—big of body, heart, and brain—and matured by experience.

He had able and loyal lieutenants. His first Ministry consisted of men who have written their names large on the records: George Shenton, Colonial Secretary (afterwards Sir George and for some years President of the Legislative Council); Septimus Burt, Q.C., Attorney General, a lawyer of profound knowledge, great wisdom, and as big in heart and enterprise as his chief; W. E. Marmion, Commissioner of Crown Lands, and H. W. Venn, Commissioner of Railways and Director of Public Works. Others who served with distinction during a considerable period of Sir John Forrest's administration were George Throssell, who initiated the Agricultural Bank, E. H. (afterwards Sir Edward) Wittenoom, Minister for Mines, and later Agent General in London, and more recently President of the Legislative Council, and F. H. Piesse, who did so much for the development of the Great Southern districts.

Then came Federation and the conversion of the Colony into a State. The circumstances leading to the adoption of this change and the altered political conditions attendant upon it, are too recent to need more than passing reference. The people of the goldfields, and the newcomers generally —numbering the great bulk of the population—desired the union; most of the older residents regarded it with suspicion. The Imperial authorities saw in a federated Australia a greater source of strength to the British Empire, and urged its adoption. Forrest—after some hesitation—placed himself at the head of the federal movement and the people voted for union by a convincing majority.

Rapid changes in the personnel of Governments followed — changes contrasting strangely with Forrest's ten uninterrupted years of power. 1901 saw five Ministries in office—those led by Sir John Forrest prior to his election to the Federal Parliament, Mr. George Throssell, Mr. George Leake, Mr. A. E. Morgans, and Mr. Leake again. The latter seemed firmly in the saddle when death removed him in the middle of 1902. He was succeeded by Mr. (afterwards Sir Walter) James, who remained in office until August, 1904. Then came the first Labour Government under Mr. Daglish, ending with a dissolution in August, 1905. Mr. (afterwards Sir) C. H. Rason led a Liberal Ministry for nine months, and was succeeded by Mr. (after-



THE HON. SIR JAMES MITCHELL, K.C.M.G.
Leader of the Opposition.

wards Major-General Sir) Newton J. Moore for four years and nine months, and then by Mr. Frank Wilson from September, 1910, to October, 1911. The second Labour Government under Mr. John Scaddan ruled from October, 1911, to July, 1916, when it was replaced by the National Government of Mr. Frank Wilson. In June, 1917, Mr. Wilson gave place to a National-Country Party combination led by Mr. (afterwards Sir) Henry Lefroy, who continued in office until April, 1919. The Government of Mr. (afterwards Sir Hal) Colebatch, lived only a month, and was succeeded by another period of stable administration with a Nationalist-Country Party team under Sir James Mitchell, continuing until March, 1924.

Comparisons are odious, particularly during the lives of the men concerned, but assuredly the outstanding political figure during the first quarter of a century since Federation was Sir James Mitchell. Like Lord Forrest, he was born in Bunbury, Western Australia. Like him, he is plentifully endowed with patriotism, confidence, and courage. When he first entered Parliament in 1905 a very pronounced depression hung over Western Australia. The goldfields were on the decline and two detrimental effects of Federation were beginning to make themselves felt: the difficulties of local industries called upon to face the competition of the older established activities of the Eastern States, and the disturbance of public finance resulting from the diminution of local Customs duties under the sliding scale allowed to Western Australia during the earlier years of Federation.

Sir James saw for these ills but one cure—increased production from the soil, and towards that he bent the whole of his great energies. First as an honorary Minister in the Moore Government, later as Minister for Agriculture in the Wilson and Lefroy Governments, and more recently as Minister for Lands in the Government of which he was for five years Premier, he brought to his task years of practical experience as a farmer and a ripe knowledge of business and banking practice. Regarding idleness as the one unforgivable crime against Nature, he provided through public finance the means of bringing the man without occupation and the land without ownership together. Surplus civil servants—unwanted because of the

THE HON. PHILIP COLLIER
Premier of Western Australia.

general depression—miners whose jobs had disappeared with the exhaustion of the mines on which they had been engaged, unemployed wharf labourers: to all of these he offered a chance on the land.

By a liberalisation of Agricultural Bank methods such as no country had previously contemplated, he made it possible for men without money, credit or experience to become farmers on their own account. The vicissitudes through which they passed have no place in this chapter. He found the State importing flour to meet the food requirements of its people, and it is as the fruits of his labours that it is now producing more wheat per head of population than almost any other country in the world, whilst the day is in sight when the annual production will exceed that of any other State in the Commonwealth. With equal vigour he approached the problem presented by the rich and almost unpeopled territory in the South-West and laid the foundations of a development in that portion of the State that may yet rival in importance the growth of the wheat belt.

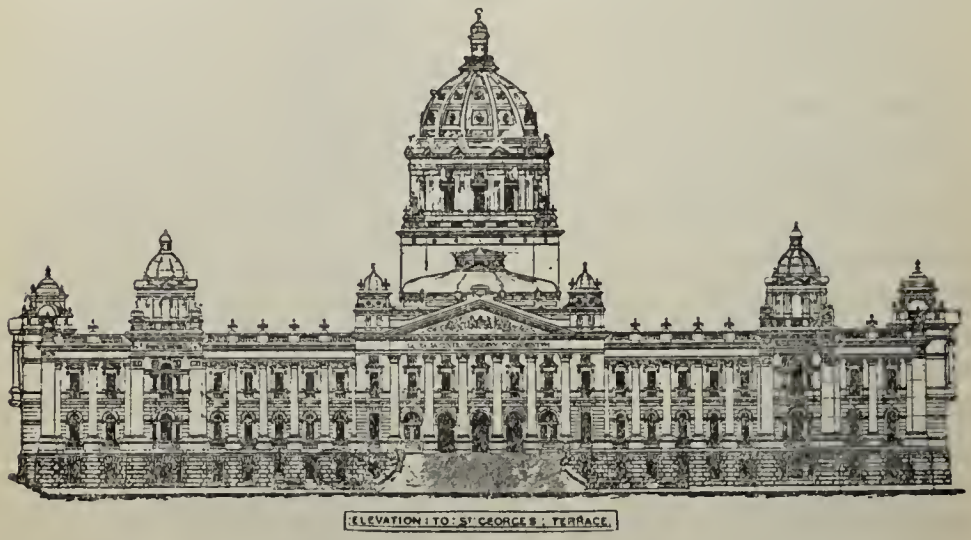
The present Premier, the Hon. Philip Collier, had occupied office in the previous Labour administration, and had led the Labour party for eight years prior to its victory at the polls in March, 1924. At the election of 1927 he was again successful. A review of the performances of his Government is for the historian of a later date, but it is a happy circumstance for this centenary year that he and his Ministers enjoy to an exceptional degree the esteem and goodwill of the community.

From time to time Western Australian statesmen have taken

> . . . . occasion by the hand and made
> The bounds of freedom wider yet.

To-day every adult, male or female, of the age of 21 is eligible for election to the Legislative Assembly, and every adult, male or female, of the age of thirty is eligible for election to the Legislative Council—subject in both cases to the usual restrictions as to nationality and legal incapacity. Adult suffrage obtains for the Legislative Assembly, whilst the qualifications of an elector for the Legislative Council are the ownership of a freehold estate

of the value of £50; the occupation of a dwelling of the clear annual value of £17; the holding of a leasehold of the clear annual value of £25; or the holding of a license from the Crown to depasture, cultivate, or mine land at a rental of not less than £10 per annum. Members of both



Parliament House—as it will be.

Houses are paid £600 per annum. The Legislative Council has thirty members, three elected for each of ten provinces, each member retaining his seat for six years and one member for each province retiring each second year, thus preserving an element of continuity in the Chamber. The Legislative Assembly has fifty members, elected in single-member constituencies for a period of three years. Western Australia was the first State in Australia in which a woman, Mrs. Edith Cowan, O.B.E., J.P., was elected to the Legislative Assembly, and that Chamber still enjoys the distinction of having a woman, Miss M. A. Holman, amongst its members.

PERSONNEL OF THE PARLIAMENT OF WESTERN AUSTRALIA. IN THE CENTENARY YEAR.

His Excellency the Governor :

COLONEL SIR WILLIAM ROBERT CAMPION, K.C.M.G., D.S.O.

The Ministry :

HON. P. COLLIER (Premier and Treasurer); HON. J. C. WILLCOCK (Minister for Justice and Railways); HON. A. McCALLUM (Minister for Works); HON. J. M. DREW (Chief Secretary and Minister for Education); HON. M. F. TROY (Minister for Lands); HON. S. W. MUNSIE, (Minister for Mines and Health); HON. H. MILLINGTON (Minister for Agriculture); HON. J. CUNNINGHAM (Minister for Agricultural and Goldfields Water Supply); and HON. W. H. KITSON (Honorary Minister).

The Legislative Council :

President—Hon. J. W. Kirwan (South Province); Chairman of Committees—Hon. J. CORNELL (South); HON. C. B. WILLIAMS (South); HONS. C. F. BAXTER, V. HAMERSLEY, H. J. YELLAND (East); HONS. J. M. DREW, E. H. H. HALL, G. A. KEMPTON (Central); HONS. J. T. FRANKLIN, C.M.G., A. LOVEKIN, J. NICHOLSON (Metropolitan); HONS. G. FRASER, E. H. GRAY, W. H. KITSON (West); HONS. J. J. HOLMES, G. W. MILES, SIR E. H. WITTENOOM (North); HONS. J. R. BROWN, E. H. HARRIS, H. SEDDON (North-East); HONS. J. EWING, W. J. MANN, E. ROSE (South-West); HONS. W. T. GLASHEEN, H. STEWART, C. H. WITTENOOM (South-East); HONS. SIR W. F. LATHLAIN, A. J. H. SAW, H. A. STEPHENSON (Metropolitan-Suburban).

The Legislative Assembly :

Speaker—HON. T. WALKER (Kanowna); Chairman of Committees—J. T. LUTEY (Brown Hill-Ivanhoe); E. H. ANGELO (Gascoyne); G. W. BARNARD (Sussex); H. J. BROWN (Pingelly); T. CHESSON (Cue); A. M. CLYDESDALE (Canning); HON. P. COLLIER (Boulder); E. W. CORBOY (Yilgarn); A. A. M. COVERLEY (Kimberley); E. COWAN (Mt. Leonora); HON. J. CUNNINGHAM Kalgoorlie); T. A. L. DAVY (West Perth); V. DONEY (Williams-Narrogin); P. D. FERGUSON (Moore); HON. W. J. GEORGE, C.M.G. (Murray-Wellington); H. A. GRIFFITHS (Avon); MISS M. A. HOLMAN (Forrest); HON. W. D. JOHNSON (Guildford); J. J. KENNEALLY (East Perth); M. J. KENNEDY (Greenough); G. J. LAMBERT (Coolgardie); A. LAMOND (Pilbara); C. G. LATHAM (York); J. LINDSAY (Toodyay); C. C. MALEY (Irwin); H. W. MANN (Perth); W. M. MARSHALL (Murchison); HON. A. McCALLUM (South Fremantle); HON. A. MILLINGTON (Leederville); HON. SIR. J. MITCHELL, K.C.M.G. (Northam); HON. S. W. MUNSIE (Hannans); C. F. J. NORTH (Claremont); A. H. PANTON (Menzies); W. RICHARDSON (Subiaco); F. ROWE (North-East Fremantle); R. S. SAMPSON (Swan); J. B. SLEEMAN (Fremantle); J. H. SMITH (Nelson); J. M. SMITH (North Perth); S. STUBBS (Wagin); HON. G. TAYLOR (Mt. Margaret); F. W. TEESDALE (Roebourne); A. THOMSON (Katanning); HON. M. F. TROY (Mt. Magnet); A. WANSBROUGH (Albany); C. P. WANSBROUGH (Beverley); HON. J. C. WILLCOCK (Geraldton); A. A. WILSON (Collie); F. J. WITHERS (Bunbury).

Western Australian Representatives in the Federal Parliament :

The Senate :

THE RIGHT HONOURABLE SIR GEORGE PEARCE, P.C., K.C.V.O., Vice-President of the Executive Council, HONS. W. CARROLL, P. J. LYNCH, W. KINGSMILL, E. NEEDHAM (a), C. M. GRAHAM (a), SIR HAL COLEBATCH (b), E. B. JOHNSTON (b).

(a) Retires June 30, 1929. (b) Assumes Office July 1, 1929.

House of Representatives :

E. A. MANN (Perth); A. E. GREEN (Kalgoorlie); J. H. PROWSE (Forrest); HON. H. GREGORY (Swan); J. CURTIN (Fremantle).

Agent General for Western Australia in London :

HON. W. C. ANGWIN.

IX: THE ABORIGINES.

THE EARLIER voyagers left few records of value concerning the people they encountered during their brief sojourns in Terra Australis. Pelsart, in 1629, observed, near the site of the present town of Geraldton, "black savages, quite naked, uncovered like animals," who would "neither speak nor stop," while Vlaming, when looking for the Swan River some seventy years later, told of footprints, a burning fire, and a rude hut, but saw no people. Later Vancouver came upon deserted dwellings in the vicinity of King George's Sound.

Group at Forrest River Mission Station, East Kimberley.

The first Englishman to encounter the aborigines was Alfred Dampier, who, during his adventurous life upon the high seas, twice visited the western coast of Australia. His first voyage to Australian waters in 1688 brought him

to King Sound, and he beached his ship at a spot now known as Cygnet Bay, where he stayed for some weeks studying the surroundings, and observing the natives. His is the first account we have of the people of the North. About eleven years later Dampier again visited the coast, this time further south, and entered and named Shark Bay. Here one of his sailors was speared by the blacks, and a native was shot in return, this incident perhaps setting in motion, so far as this district was concerned, the "lex talionis" of the aborigines, repeated as time went on in other parts by members of both the white and black races.

The limited knowledge of the primitive people of the world up to the time in which Dampier lived caused him to look and comment unfavourably upon the new race he had discovered, and though his description of their appearance tallies in some respects with later knowledge, he is evidently in error in his deductions as to their food supplies, while their prowess in the art of hunting must have escaped his notice. The few weapons which he described, he assumed were meant for defence, and did not discover that the main reason for their peculiarities lay in their being specially designed to secure for food certain unusual species of native game. The "sword" he mentions was doubtless the boomerang aimed to bring down the kangaroo in its hopping flight, the emu, buzzard, and birds on the wing, returning to the feet of the thrower, and carried in the hair belt round the waist when not in use, which gave it the scabbard-like appearance he noticed. The "lance" was used to spear fish, in which the Northern waters abound.

Dampier remarked that the natives' eyelids were always half closed to keep the flies out of their eyes, which were "so troublesome, while no fanning would keep them off." He failed to realise that those close-lidded eyes enabled the aboriginal to gaze straight into the full glare of a burning northern sun without flinching, and to suffer with equanimity the irritation caused by the troublesome fly.

Little is known of the aborigines' outlook towards the strangers entering and possessing their lands when white

settlement began in earnest. Imagine some elder of the race as he stands upon a rocky headland, gazing with unblinking eyes out to sea into the setting sun! Outlined against the horizon he notes a strange shape moving slowly over the waters towards the land. He turns and runs to tell his family—they also must come and look. "Kybru"! he exclaims, and so the ship, "something seen for the first time," is named, and the name remains a native word, "Ky"—in the distance, "bru"—I saw it. He wonders what this strange shape, this thing so like some great bird, may be. Perhaps a visitant from the spirit world. Physical fear he knows not, but supernatural awe possesses his soul. He is filled with a sense of the wonder of it.

Then presently he watches from his vantage point the landing of the white men. These must surely be his people, men from the west, returning from some blacks' Valhalla, reincarnated, changed in appearance, but nevertheless to be venerated and welcomed as visitants from the spirit world, even as Captain Cook who, when he reached the Hawaiian Islands in 1778, was regarded by the natives —having never seen a white man—as an incarnation of the god Lono, their ancestor, and was clothed in tappa cloth and offered sacrifices. Knowing no other peoples, the aborigines did not at first recognise in the whites any superiority in physical or mental attainments. They accepted them in good faith, and did not greatly resent their initial intrusion, though later, as the result of contact, their attitude became less favourable.

Gascoyne Natives thirty years ago.

Flinders in 1801, referring to the natives' attitude towards

his party, says that they left, after the first interview, with "some appearance of contempt and pusillanimity which was probably attributed to the desire we showed to be friendly with them." These friendly advances were doubtless regarded by the natives as a sign of weakness. From their point of view these strangers brought presents, an act of propitiation, sought to placate them for something desired, so they were contemptuous. They did not understand, any more than the full-blood aboriginal of to-day leading his primitive life understands, gifts offered in well-meant kindness, rather regarding these as bribes tendered in expectation of some favour.

Whence and when came these stone-age men? Science has not satisfactorily solved the mystery of their presence in Australia, though there exist theories in number. That man had been here for untold ages, leading a carefully designed and well-ordered existence is certain, and it seems equally certain that from the moment the white man took possession of his country the days of the black man were numbered. It remains to be seen whether the existing remnant can, in the light of knowledge gained through the years of contact with Europeans, be preserved through another hundred years of enlightened treatment.

Tribal Markings, Collier Bay Native.

The whole of the south-west corner of Western Australia was occupied by the great Bibbulmun tribe, perhaps ten thousand strong. They were different from the native peoples of the remainder of the State in at least two respects: they did not practise the chief tribal rites of initiation in the rather horrible manner indulged in by other tribes, nor were they addicted to cannibalism. They were a homogeneous horde, divided into two main classes or "phratries," the members of which could inter-marry, but neither could marry within itself on pain of death.

They dwelt in family groups beside permanent waters, and every family had its group totem belonging to that permanent water. Thus almost every creek and water-hole retains to-day its native name, the meaning of which indicates the totem of its erstwhile possessors. Every group had its well defined "worrie," that is to say, area within which it might roam, but none could extend its visits beyond its bounds except during special visitation periods; thus did they respect each other's food supplies. Food was plentiful, and each group had its special totem foods, and totem laws regulated the supplies. The distribution was upon a communal basis, the old men being served first, young men and children next, and the women last. Each group was dependent upon itself for its daily food, hence the family groups were in constant motion to and fro over the many waters of their totem land.

Warrior of Bibbulmun Tribe.

Since Nature provided so liberally, they had no need to till the soil in order to increase supplies. They had no knowledge of the art of cultivation, but they exercised certain restrictions in the use of supplies liable to exhaustion.

For clothing they wore cloaks of kangaroo skins, a number sewn together making what was known as a "bowkka," but devoid of the tails, which they roasted in the ashes and ate. They had few weapons, and these were designed more for use in hunting and inflicting tribal punishment than for warfare. Those they had were the club, the spear, the stone axe, and the flint knife. Shields and spear throwers were later brought in from other areas, probably also the boomerang, but the spear and club were the principal hunting and fighting weapons. A breach of tribal law, the breaking of tabu, was often a serious

matter, and an offender had to take his punishment like a man, in proportion to the evil that he had done. He was lucky if he escaped death, which he sometimes might do, as he was permitted to catch or dodge the spears hurled at him by those chosen to inflict the punishment. His champions would see to it that he got fair play, and not infrequently a free fight ensued. Again, sometimes the culprit would ask that a spear might be properly thrust through him, that if he lived thereafter his crime might be completely expiated; he desired to be served as he had served the other, and so "get rid of his trouble." A warrior of worth, he wished as a point of honour that the punishment might fit the crime. These simple people had few gross practices such as those connected with devil-worship, and were never head-hunters. Neither were they idolators, and they prayed to no one god, but offered simple oblations to the spirits they believed ruled the elements and the sources of sustenance.

A young man required to walk warily in his selection of a mate. The marriage laws which formerly obtained throughout, and still hold good in remoter districts, were strictly observed, being largely governed from the vital standpoint of food. There was a lawful marriage road in all tribes, and if the supply of eligible women gave out, leading to encroachment in unlawful directions, trouble followed. The young folks knew with whom they might consort, and whom they had to avoid; the old men maintained discipline with a firm hand. Female children were betrothed in infancy, and sometimes "promised" prior to birth. They were virtually "bought" by their prospective husbands, who saw to it that the girl's people were well fed and looked after, excepting the future mother-in-law, who was tabu. Polygamy was allowed, but as the owner of more than one spouse found it costly to find sustenance for his wives' relatives, the number of wives seldom exceeded three.

Until the white man came, the fact of birth was shrouded in mystery to the aborigines. Babies came in "dreams" to the men of some tribes. The moon, certain caves and places, hills and rocks, were the homes of spirit babies who issued therefrom and entered the mothers. The

elders ruled the group, and each group was complete in itself. The young men had to obey the elders, the children were spoiled, and the women came last. The men were "masters of their women," whom they made the burden carriers, hunters of small game, and collectors of roots, fruits, and such like, the while they rested and loafed according to their inclination. When travelling, the women had to carry the babies, and oft-times a mother had to carry two not old enough to walk, feeding them as she journeyed.

Native Graves, Eastern Goldfields.

Gradually as they gave way before the white man, so of necessity the aborigines relaxed the strictness of their ancient laws. Their group waters were taken over by the newcomer, and the group owning that water was rendered homeless and foodless. They saw their game destroyed and replaced by the white man's cattle and sheep, and some got angry and killed; and were hanged. Some few fell in with the white man's ways, but with the majority the desire for life under such conditions weakened, and sometimes singly, often in twos and threes, they died, family after family, group after group, until the Bibbulmun tribe became practically extinct. The white man knew nothing of their marriage laws, and broke these down so drastically that the groups themselves began to ignore the rules they had followed for ages, and there were in consequence many killings by outraged elders, brothers and fathers of the wrong-doers.

Magic, sorcery, spiritism, have always played a large part in the everyday life of the aboriginal; they guide his every action. Whatever the origin of beliefs and traditions handed down from long forgotten generations,

the wiles of the medicine men still exercise a potent influence for good or evil. They wield power of life and death, and the youthful black is far from being the master of his fate. He lives in a spirit world, devoting no small portion of his time in propitiating the spirit agencies which he believes regulate his comings and goings, his food supplies, his sickness or health, and decide his sojourn on earth. He believes his spirit is active even after death, and influences the actions of his relatives in the avenging of his death, which to him is never of natural occurrence but caused by evil influences exercised by some member of an opposing tribe. This brings about a perpetual vendetta, and the over-riding of white-made laws in the process.

Should some member of a tribe offend, and his death be decided upon, there are various methods of indicating the fact to him, such as "pointing the bone" or causing sickness through placing a "mobbin" on him, and the fact that he has been condemned to death by such means almost invariably brings it about. He just sickens and dies, and no actual cause of death can be found. The submission of the aborigines to their laws when living in their natural state is very remarkable, and the amount of punishment for every offence is known and administered. They are, moreover, slaves to form and ceremony, and observe a strict ritual in all their festivals. There are forms for meeting, parting, communicating intelligence, and in fact for almost every occurrence of life.

The homogeneity of the aborigines, the similarity in their language, laws, customs, and mode of life, indicate their common origin, and the picture drawn of the life of the Bibbulmun tribe more or less represents the life of every tribe throughout Australia, subject to changes due to climatic influences, environment, and tradition. There are those who think that these people originated from more than one invasion, and it is true that in the far North Malayan influence has made itself felt not only in the appearance of the people but in certain other characteristics, such as their love of drawing.

The main points of difference observable between the various tribes are in the manner of conducting ceremonial

observances, and variations in dialect. There is scarcely a word in the whole of the languages which has the same meaning throughout. There are a few which may be recognised by their similarity, though even these have not the same meaning in every district. Eyre pointed out nearly a hundred years ago that it would require a lapse of years and the labours of many to detect the links which form the chain connecting the habits and history of tribes so remotely separated. The work of co-ordinating knowledge previously gained with the results of recent scientific research is now in active progress, and the result should prove exceedingly interesting.

Native Drawing in Cave, West Kimberley.

It is difficult to gauge the extent to which the white man is responsible for the gradual extinction of the black throughout Australia. Apart altogether from acts of oppression in the past, and the inevitable result of the displacement of a weaker race by a stronger, there is evidence to suggest that left to themselves the aborigines would never have become a numerous people. The indications are that deterioration had set in before the whites came and that unchecked disease had already taken its toll, so that even though his cycle of life on earth might have been considerably extended, if left to himself his ultimate disappearance was probably inevitable.

Western Australia contains many thousands of true aborigines, still practising all the primitive methods of

their progenitors. These are living far apart from white settlement, while many others who have more or less adopted the ways of civilisation are scattered throughout the State. Numbers of these people have been absorbed into the life of the community, and make useful workers, being largely employed in the care of stock throughout the North, and as teamsters, farm hands, and clearers elsewhere.

Kimberley Native.

The number of aborigines inhabiting Australia prior to the advent of the white man was approximately three hundred thousand, and in this State there were about 100,000. To-day we find some 72,000, including half-castes, in the whole of the Commonwealth, of whom 25,000 odd are in Western Australia. It is only in recent years that the numbers have been fairly correctly estimated. In 1901 it was believed that there were only some 40,000 still in Australia, and more inaccurate still was the early estimate of those credited to Western Australia—a little over 5,000. It is true that included in the present figures for this State are some 10,000 people dwelling outside the confines of civilisation, and respecting whom little is known. It may be that these figures are in excess of actual numbers.

The decadence of the native race, even in the earliest days of settlement, did not go unnoticed, and early colonists did a great deal in the hope of arresting the decline. From the outset efforts were made by the State, missionary societies, and private individuals, to protect and civilise the natives, but none of these was successful. Sir George Grey put it down to prejudice, and said that the natives had been falsely represented as an inferior race and on a level with the brutes.

Perhaps one of the chief mistakes in early day treatment was that every effort was directed from a charitable standpoint. The native was pauperised. He was fed and clothed, and provided with medicines, but little if anything was done to teach him to be self-supporting, and self-respecting. In recent times such efforts have been made,

and have been followed by a fair measure of success. The older people must continue to be regarded as objects of charity and sympathy, but the younger generation stand a better chance of working out their own salvation with the help and encouragement of the Department specially created to further their welfare.

Feeding and clothing the indigents, caring for and educating the children, and safeguarding the health of all are the active functions of the Aborigines Department. A feature of its administration, unique amongst the methods adopted throughout Australia, are the cattle stations established solely for the benefit of the natives. In this State there are three such stations where the stock and produce raised are designed for the use of the aborigines, thus replacing their natural supplies. Numerous feeding depots are scattered over the country, and no native need suffer privation so long as he is able to draw attention to his requirements and present himself at one or other of the establishments provided for his welfare. The work of the department is ably seconded by various missionary societies.

In 1890, the year which marked the granting of self-government to Western Australia, the cost of caring for the aborigines amounted to the comparatively small sum of £1,974. To-day the total commitments of the Aborigines Department involve an annual expenditure of over £31,000. Clause 70 of the "Constitution Act of 1889" provided that the sum of £5,000 should be appropriated out of the Consolidated Revenue Fund in every year for promoting the welfare of the aboriginal natives and also that if and when the gross revenue of the Colony exceeded £500,000 in any financial year, an amount equal to one per centum of such gross revenue should be substituted for the previously mentioned sum of £5,000 in and for the next following financial year.

Sixteen years later the existing "Aborigines Act" came into force, and this embraced the repeal of Section 70 of the "Constitution Act of 1889," providing in lieu thereof Section 5 of the 1905 Act. This section authorises the placing at the disposal of the Colonial Treasurer in every

year out of Consolidated Revenue Fund the sum of £10,000, and such further moneys as may be provided by Parliament to be applied to the purposes of the Aborigines Department. Since the establishment of the Department in 1898 it has been found necessary to spend a great deal more than the statutory provision.

SUMMARY OF EXPENDITURE BY THE STATE UPON THE ABORIGINES.

Up to 1890	....	£138,160 (approximate)
,, 1900	....	* £260,083
,, 1910	....	£415,424
,, 1920	....	£715,456
,, 1928	....	£961,320

* Includes £115,966 spent in connection with Rottnest Native Establishment.

Missionary societies have spent not less than £200,000 in promoting the welfare of the aborigines. This sum includes portion of the contributions from State Funds by way of subsidies, contained in the summary of expenditure shown above.

NATIVE POPULATION.

	Adults.	Children.	Total.
Kimberley	6,548	1,251	7,799
North-West	2,665	390	3,055
Murchison	1,929	271	2,200
South-West and Eastern	1,300	737	2,037
	12,442	2,649	15,091

Native Population within confines of civilisation	15,091
Native Population (estimated) outside confines of civilisation	10,000
Total native population	25,091

These figures include 2,404 half-castes.

X: A BIT OF OLD SPAIN.

IN THE Victoria Plains, eighty-two miles from Perth, in a smiling valley, is hidden away a bit of old Spain. Removed from railway communication it preserves a monastic quiet and seclusion. Approached by road, it bursts suddenly upon the view of the astonished traveller. For hours he has passed through bushlands and farm country, with small ultra-modern townships at irregular intervals, and then without warning, from the top of a slight incline, is unfolded to him a vision that seems almost unreal. The quaint beauty of its setting, the old world model of its architecture, the number, the size, the real magnificence of some of its buildings, excite wonder and admiration. Nowhere else in Australia is there a place like New Norcia, and he who is fortunate enough to spend even a few hours within its hospitable walls will find interest quickened to the liveliest appreciation.

Its fascinating history covers a chapter of West Australian pioneering almost unparelleled in its record of hardships endured with patience, and difficulties overcome by energy and courage. Early in 1846 the newly arrived Catholic Bishop of Perth allotted the Central Missionary division to Dom Joseph Serra and Dom Rosendo Salvado, two Spanish Benedictine priests. With three assistants, they set out on the 16th of February to establish a mission on the Victoria Plains, where the soil was reported good, and there were large camps of natives. Scantily supplied with provisions, and often short of water, they made their way through Bolgart and founded a settlement at "Batgi-Batgi," some five miles north of the present site of New Norcia. The presence of water determined their selection. This, the first of many missions to the aborigines of the Colony, was doomed to signal failure.

There were no resources on which to exist until crops could be raised. One of the little party died, and two

others left owing to sickness. A suggestion that the enterprise should be abandoned was rejected with scorn by Dom Salvado, who had already conceived a zealous regard for the natives committed to his charge. He was a musician of great talent, and walking to Perth—almost in bare feet—he organised a concert to raise funds. He was the sole performer, and appeared upon the stage clothed in rags and tatters. But the concert was at once an artistic and a financial success. He bought agricultural implements and other requirements with the proceeds. The direct northern route had not been opened, and on the return journey he climbed the Darling Range, descended the valley towards Northam and waded through the Avon River, calling at the home of the botanist (Mr. Drummond).

He had a cart drawn by a pair of oxen, and the load included five goats, a kangaroo dog, two chickens and a cat. He travelled more like a pedlar than a priest.

In the flats and creeks the bush track was concealed under water—for it was midwinter. Often in the boisterous wind and pelting rain it was impossible to light a fire, and his food consisted of grubs, roots, and lizards. Once when the track was lost the bullocks refused to pull, and the good Father addressed them in language unfamiliar to their kind: "My friends, if you don't know the way, I don't either." Twice he had to unload, in order to get the bogged cart out of the slough, and finally he left cart and bullocks behind, and walked the last five miles to the mission, carrying the cat and the chickens in their cage and leading the dog and the goats. Then came his first experience in ploughing, of which he says:

> As I walked up and down the furrow, holding the plough tail in my hands, my bare feet trampled on the sharp roots and stones and, alas, my bleeding feet, besides the sweat of my brow, watered the soil I was working up.

That all such toil and heroism should be in vain! The funds raised by the concert in Perth afforded only temporary relief, and in November, 1846, the Fathers had to return to the capital.

A providential gift from Europe enabled them to set out again early in the following year, when it was found that

their small improvements had all been destroyed and the land they had cultivated was included in a lease held by some shepherds. They moved a little to the south, and, in a beautiful and fertile valley, then known as "Maura-Maura," New Norcia was established: named after the birthplace of St. Benedictine, Norcia, in Italy. Fathers Serra and Salvado commenced with a grant of 30 acres of land, to which another 30 acres was shortly added, together with a pastoral lease of 1,000 acres. Thirty-four acres were cleared and cultivated, and the astonished natives for the first time watched the sowing of a crop. To see the precious wheat scattered broadcast on the land to rot filled them with consternation! With the introduction of a few cattle and the purchase of over 700 sheep the mission grew rapidly.

The stories told of Father Salvado at this period are legion and almost Homeric. He marked out and opened a direct road to Perth, chopping down the trees himself; he would walk to Toodyay, fifty miles, and back, carrying a heavy ploughshare on his shoulder; whether toiling in the fields or teaching catechism to the blacks, he was the embodiment of patience, courage, and confidence. The inspiration of missionary zeal dominated all his undertakings.

The Monastery.

The foundation stone of the Monastery was laid in March, 1847, and at the end of the same year St. Mary's Orphanage for native children was opened. Early in 1848 Dom Serra proceeded to Rome for auxiliaries and money. Emulating

Columbus, who on his return from the discovery of a New World took three Indians with him to Spain, Dom Serra carried back one Upumera, the first Christian spoil of the West Australian bush. What happened to him? What impression did he form of the wonders of civilisation? Washington Irving asks the same questions concerning the willing captives of Columbus, and adds: "The early Spanish historians seem never to have interested themselves in the feelings or fortunes of these first visitors from the new world to the old."

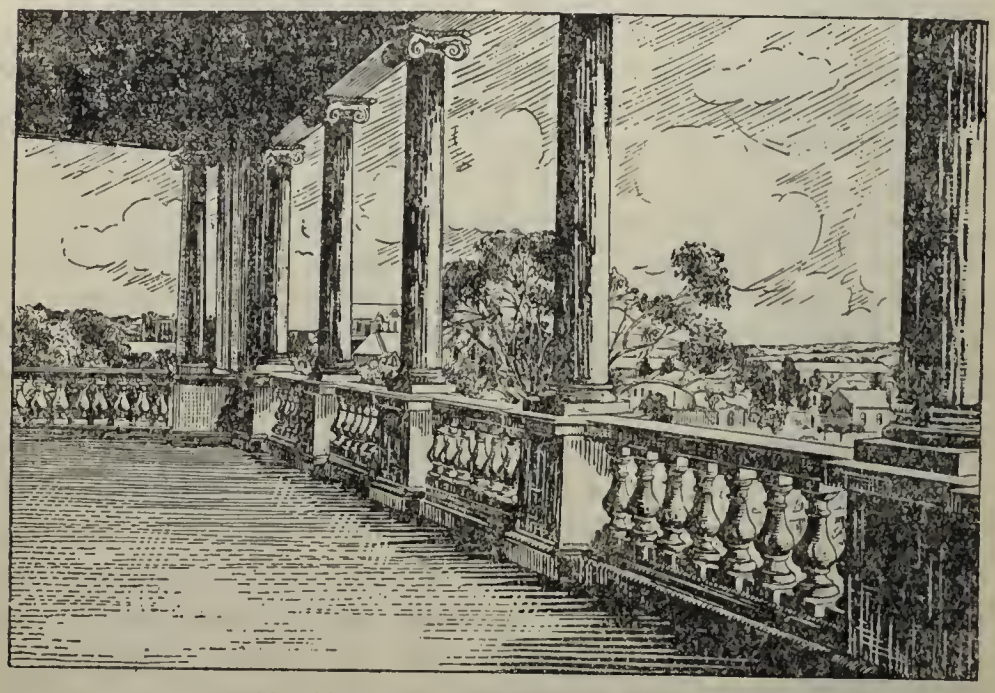
Soon after his arrival in Rome, Dom Serra was created Bishop of Port Victoria in the Northern Territory. Dom Salvado found himself alone, and soon after it seemed that his services, too, would be lost to New Norcia. Visiting Rome in 1849 he was appointed to succeed Bishop Serra as Bishop of Victoria, but with the subsequent evacuation of that place by the British Government he returned to New Norcia, where he spent the remainder of his long and useful life. In 1859, under a decree issued by the Holy See, New Norcia became an autonomous mission and Bishop Salvado—with monetary assistance and about forty young volunteers from Spain—found himself equipped for the building up of a great institution.

Always his thought was for the natives. He gave the men small plots of land to cultivate and trained the women in domestic duties. Schools and orphanages were built for the young, and cottages for the married. In 1867 New Norcia was made an Abbey Nullius, with charge over a definite area. An important village grew up, largely self-contained, in which the natives were intoduced to habits of industry. Considerable areas of land have since been acquired, aggregating a noble estate, worked to the highest advantage and producing large quantities of wool and wheat and wine.

The magnetic personality of Bishop Salvado attracted to him men of all classes and all creeds; rich and poor regarded him with affection and reverence. A robust constitution furnished him with amazing energy, continuing long beyond the usual span of life. After 54 years of devoted service he died in Rome in his 86th year. His

remains were translated to New Norcia, where they lie in a tomb of white Carrara marble behind the High Altar in the Cathedral. In the initial letter of this chapter is a drawing made from an old photograph of Bishop Salvado.

During the present century, under the direction of Dom Fulgentius Torres—elected Abbot of the Monastery in 1902—and of the present Superior, the Right Rev. Abbot Catalan, O.S.B., an imposing edifice has been raised on



New Norcia from the balcony of the Hostel.

the foundation laid by Bishop Salvado. The old Monastery has been completed. The library contains 10,000 volumes, amongst them some of the oldest books in the world, including specimens of almost every important ancient and modern language. In the Art Gallery are originals and fine copies of several great masters. Many of the buildings are adorned with paintings of rare beauty, the work, extending over many years, of some of the Spanish monks. The Cathedral, opposite the Monastery, is a dignified and impressive structure.

A seat of learning in music and every branch of art and science and literature, the scope of the Mission's work

has been widely extended beyond the teaching of the natives. St. Gertrude's and St. Ildephonsus's Colleges, admirable samples of the Gothic and Byzantine styles of architecture, attract girls and boys from all parts of the State, and have produced scholars of distinction.

In this year of grace 1929, the attention of the Australian people has been specially directed to the condition and future prospects of the aborigines. The last Tasmanian native died in 1876. In Victoria, of once numerous bands probably less than one hundred souls remain. Throughout Southern Australia the numbers are rapidly diminishing. Is the whole race destined to disappear before the march of civilisation, as has happened in other countries? New Norcia mission furnishes one of the oldest and most comprehensive efforts to fit these people to take a part in the ordinary life of the community. An exhaustive study of the difficulties encountered, and of the measure of success that has been achieved, should throw some light on the problem now confronting Australian statesmen. In the meantime this Benedictine settlement stands without rival as a place of downright interest, as a centre of artistic and architectural attraction, and as an example of the complete conquest of pioneering hardships.

XI: FLORAL GLORY.

THE glory of the wildflowers of Western Australia impressed the State's first white settlers. Where in 1929 stands Perth, a close-packed area of paved streets and substantial buildings, the native forest in 1829—its undergrowth bright with flowers at all seasons of the year—was unspoiled by man. No introduced species had spread to crowd out native plants sensitive to intrusion. Falling leaves, dropped petals, rotted trunks of dead trees—their own life finished—for countless centuries had given of their spent strength to aid new growth, born of seed scattered hither and thither by Nature's scheming. News of a flora of surpassing splendour went forth from the young Colony, with specimens collected by officials aware of their botanical interest, and by settlers ignorant of all but their unusual beauty.

James Drummond, a "Parmelia" pioneer, made many collections of Western Australian plants which were forwarded to England for the consideration of the leading European botanists of the day, and the flora of Western Australia quickly attracted the attention of scientific investigators. The early history of the State records association with many men whose visits were prompted principally by desire for botanical research. Among these was the illustrious Charles Darwin. Passages in that fascinating epic, *The Voyage of the Beagle*, indicate that he was as unfavourably impressed with Western Australia as with other portions of the island continent, but our wild flowers made a strong appeal to him, and he collected many specimens. On his return to England he wrote from his home at Down, Bromley, Kent, on May 16, 1860, to Mr. James Drummond, who had occupied the office of Superintendent of Government farms and gardens since the foundation of the Colony, asking for information to enable him to determine certain matters in regard to the fertilisation of *Leschenaultia formosa*.

He wrote—

> The indusium or cup at the summit of the pistil is open in the bud, but before the flower opens the indusium closes and in closing includes nearly all the pollen. In my greenhouse the indusium never opens again. The pollen within the indusium is enclosed near the lips, and not a grain lies, as I find, on the stigmatic surface at the bottom of the indusium. How then is the plant fertilised? My belief is that insects in creeping in to suck the copious nectar, brush open the indusium, and the hairs of their abdomens stir up the pollen and push it down into the stigmatic surface. I find that this is easily effected by a camel hair brush. Now what I want to beg is for you to have the greatest kindness to watch for a short time the *Leschenaultia* and see whether bees visit it; and if they do, to endeavour to observe whether, in crawling in or whilst sucking, they do not open the lips of the indusium. The subject has been largely discussed by celebrated botanists. If any other Goodeniaceae, furnished with an indusium, grow near you, I should be infinitely obliged for any notices on their structure, in relation to the following point: "How in one flower is it possible that pollen from another flower or plant of the same species could get into the indusium?" I have strong reason to believe that this is a universal possibility. In the *Leschenaultia*, if insects open the indusium in the manner in which I suspect, their abdomens dusted with pollen from one flower might easily carry grains into the indusium of another flower.

Mr. Drummond replied, giving certain information and forwarding some specimens. The correspondence continued, and has been preserved by Mrs. J. M. Drummond, of Peppermint Grove, who has kindly made available for publication the accompanying fac-simile of one of the great naturalist's letters.

Dampiera linearis.
Half actual size.

Long, long before Western Australia was proclaimed a Crown colony, a gallant Englishman, William Dampier, who visited Western Australia's North-West coast in 1699, collected specimens of the flora destined to become celebrated. Dampier's notes, as recorded with rough woodcuts in the diary of his voyages, reveal astonishment at the profusion of beautiful flowers. Some of his collected specimens are still preserved in the museum at Oxford, England. Among them are the popular

Nov. 22d 1860 Down Bromley Kent

Dear Sir

I am extremely much obliged to you for your second interesting letter of Sept. 17th — What you state about the Leschenaultia not seeding is surprising; but from my experiments I cannot get it out of my head that the agency of insects, though not perhaps indispensable, to their fertilisation, yet is useful to them. You do not mention, but I should much like to know the simple fact whether the flowers of Leschenaultia (or other Goodeniaceae) are visited by Bees or other insects. — Your offer to send me seeds of Dictyli & to other genus, will be of greatest possible interest to me. — With my very sincere thanks for all your great kindness, I beg leave to remain

Dear Sir

Your sincerely obliged

Charles Darwin

"Sturt's desert pea (*Clianthus speciosus*, better known as *Clianthus Dampieri*) and a species of the genus subsequently called *Dampiera*. The association of Dampier's name with this genus, the species of which are mostly blue-flowered, is pleasing, for of West Australia the great explorer wrote—

> Most of the trees and shrubs had at this time either blossoms or berries on them. The blossoms of the different sorts of trees were of several colours, as red, white, yellow, etc., but mostly blue: and these generally smelt very sweet and fragrant, as did some also of the rest. There were also beside some plants, herbs, and tall flowers, some very small flowers growing on the ground, that were sweet and beautiful, and for the most part unlike any I had seen elsewhere.

Among botanists and collectors who have worked upon the flora of Western Australia are:

> W. B. Alexander, C. R. P. Andrews, James Backhouse, William Baxter, George Bentham, Benjamin Bynoe, A. P. de Candolle, George Clifton, Dr. Alexander Collie, Allan Cunningham, K. Domin, S. Endlicher, A. Engler, A. Ewart, R. D. Fitzgerald, W. V. Fitzgerald, Lord Forrest, Charles Fraser, L. de Freycinet, C. A. Gardner, C Gaudichaud, Lt.-Col. B. T. Goadby, Sir George Grey, W. H. Harvey, D. A. Herbert, J. D. Hooker, Charles von Huegel, M. Kennedy, Richard Kippist, J. J. H. de Labillardiere, Johann Georg Christian Lehmann, J. Lindley, Louis Theodore Leschenault, J. H. Maiden, Captain James Mangles, R.N., G. Maxwell, C. F. Meissner, Archibald Menzies, A. Morrison, W. Morrison, F. von Mueller, Dr. E. Pritzel, Ludwig Preiss, A. Purdie, Claude Antoine Gaspar Riche, J. S. Roe, Dr. R. S. Rogers, O. H. Sargent, J. C. Schauer, James Sowerby, R. Sweet, R. Tate, N. Turczaninow, Pemberton Walcott, James Braidwood Wilson and Bernard Woodward. Many of these men have been honoured by the application of their names to numerous West Australian botanical species or genera.

The difficulties of collecting botanical specimens one hundred years ago were instanced by William Baxter, who in 1829 visited King George Sound, under arrangement with the Sydney Botanic Garden Superintendent, "to make a general collection of seeds and plants and transmit the same to the Government, the Colonial Government retaining one-half of each, and to allow the remaining half to be transmitted to his constituents in England; the Government furnishing him with a regular ration and the necessary equipments, such as twine, paper, cases, etc., for the preservation of the collection." Mr. Baxter wrote

from King George Sound, on March 25, 1829, to Mr. C. Fraser, Colonial Botanist, Sydney:

> I intend taking a long journey to the eastward and if I can prevail on the Captain to land me about 300 miles east of this it will save me all the walk there. . . . You will see that I have not been idle since I arrived. I was much surprised to find everything so late here. I have got almost everything that ripened this season, but there are still many more not yet ripe. Pitchers are only coming into flower now. Banksias and other large seeds are hardly ripe yet. I have sent you a few of some I collected a good distance inland, but not having near enough to eat I am not able to carry but a small quantity of each sort. I never knew what a ration was before, but I find it by far too little to take such long journeys and carry such heavy loads as I do.

Earliest knowledge of the vegetation of the southern coastal area of Western Australia was gained by C. A. G. Riche, a French botanical collector and entomologist, who came to Australia as naturalist on "L'Esperance" (D'Entrecasteaux Expedition, 1791-4), and lost his way while botanising. Labillardiere made one of a search party. Riche was traced to the edge of a salt lake near Esperance. For fifty-four hours he had been almost without food, and had supplemented his slender supply with the fruit of the shrub now known as *Leucopogon Richei*. His specimens were all lost, but Labillardiere collected while searching and his finds included *Leucopogon Richei*, *Banksia repens*, *Banksia nivea*, *Chorizema ilicifolia*, *Eucalyptus cornuta*, and *Anigozanthos rufa*. The name chorizema, adapted from Greek words meaning "dance" and "drink," was given because Labillardiere and his party danced with joy at the spot where the plant was found, for they were very thirsty and close by was a spring of fresh water.

Chorizema ilicifolia.
Half actual size.

Western Australian wildflowers were first pictured by an artist referred to by Dampier in the diary of his voyages as "a person skill'd in drawing." Copper prints and line drawings illustrate Dampier's

records of his second voyage to Nova Hollandia. They include sketches of several of the Western Australian specimens collected. Allan Cunningham's water colour drawings of many Western Australian flowers are treasured in the museum at the Sydney Botanic Gardens. Coloured prints, reproduced from paintings by E. D. Smith, of twenty odd plants grown in England from Western Australian seeds obtained by W. Baxter, are included in *Flora Australasica*, by Robert Sweet, F.L.S., a book published in London in 1828.

Mrs. Ellis Rowan, one of the world's best known flower painters, travelled extensively in Western Australia while at work upon wildflower studies included in her Australian collection acquired by the Commonwealth Government for the National Museum at Canberra. Other artists whose paintings have perpetuated notably the charm of colour and form of Western Australian wildflowers are Lady Forrest and Mrs. A. Dorrington (collections now in the Perth Museum), Miss Florence Fuller, Miss C. Miller, Miss May Gibbs, Miss Daisy Rossi (Mrs. G. T. Poole), Miss Janie Craig, and Mr. Stanway Tapp.

Public interest in Western Australia's flora and recognition of its value as a national asset were stimulated in the early days of the young Colony by the enthusiasm of visiting collectors and botanists. In 1897 the Mueller Botanic Society was formed in Perth, to be afterwards incorporated with the Western Australian Natural History Society, and later absorbed by the Royal Society of Western Australia. The journals published periodically by these societies have been the accepted scientific media for announcing the classification of new species of plants. In 1924 the West Australian Naturalists' Club was founded to encourage general interest in the study of the natural history of the State. The plea of scientists and Nature lovers for the preservation of the West Australian flora has found pleasing response in the State schools, where Nature study has become a favourite subject both with teachers and pupils.

In King's Park, Perth, citizens and visitors have convenient opportunity for the observation of many beautiful

bush plants in their natural environment; the handsome red and green kangaroo paws and the royal purple hovea being particularly abundant there.

Western Australia has many varieties of soils. The South-West portion is the best watered, and there is found the chief timber wealth. The Northern part of the State has many plants in common with the Northern Territory. The flora of the extra-tropical South-West is remarkable for diversity of type and beauty. Many species of well-known families favour various localities and soils. The range of others is limited; in many cases, extremely so. The coastal limestone hills, the sand plains of the interior, the jarrah and karri forests, the gravelly rocky slopes of the Darling Range, the Murchison flats, the granite-bound seaboard of the Southern coast, the foothills and precipitous peaks of the Stirling Range—all have a flora of their own, each so distinct that the habitat of specimens collected in any of these localities can be named instantly by botanists at all familiar with the State's flora.

Though bush flowers abound in Western Australia from south to north, and from west to east, the Stirling Range, 40 miles north-east of Albany, is the real garden of the State. A succession of craggy peaks rises abruptly from a low-lying coastal plain, bristling the sky-line for 50 or 60 miles. The Stirling Range (highest peak, Mt. Coy-anarup, better known as "Bluff Knoll," 3,640 feet) is the Mecca of botanists and the delight of tourists. All the year round the rugged range holds interest for the collector, but in the springtime the magnificence of the floral treasures that adorn individual peaks, mountain sides and foothills amazes even those familiar with the flower patches of the Thibetan Himalayas. Though many of Western Australia's 4,000 odd plants are widely distributed, a considerable number of Stirling Range specimens are isolated in their habitat, and numerous species well worth attaining are accessible only after arduous climbing.

The inland spread of wheat cultivation areas towards the close of Western Australia's first century of settlement supports the arguments of those who refuse to condemn the dry interior of the State as "desert," a term utterly

misused when applied to the great tableland with an altitude of from one to two thousand feet above sea-level, lying between the 19th and 31st parallels and the 121st and 129th meridians. The surface of this area consists of sand-dunes interspersed with large tracts of clayey soils. It supports a copious and beautiful flora.

Instances of Nature's methods in adapting the construction of plants to withstand the dry conditions of long, rainless summers are prominent in the highly specialised development of the West Australian flora from primitive plant types. Root systems have been extended to the deeper strata of the soil, or modified in many ways to overcome lack of overhead moisture. In many instances water is stored during the wet season in bulbs, tubers, and various forms of swollen roots or underground stems. But it is not solely underground that this storage of moisture is effected. It is seen in the stems and branches of plants, also in the leaves, as in Mesembryanthemum ("Pig-face"), Isotoma, and the Lobelias. Leaf reduction, whereby the

Pig-face (*Mesembryanthemum aequilaterale*).
One-third actual size.

breathing surface of the leaf is considerably lessened, is one of Nature's principal means of assisting a large number of West Australian plants to withstand drought, their foliage being of a stiff and spiny character, the soft cellular tissues reduced to a minimum, the leaves narrow with prominent mid-ribs and ending in sharp points. In one group of West Australian acacias, "Wattles," not only are the leaves in these plants reduced to phyllodia (leaf stalks), but they enter into the formation of the stem and branches, providing them with wings and having only their tips free.

The copious rainfall of the winter months encourages luxuriant growth in some broad-leaved plants, which have to be protected in summer. The leaves of many eucalypts, some of the acacias, and other plants, are set in a vertical position, so that their surfaces receive a minimum of the sun's rays during mid-day heat, while others have a covering of wax. Young shoots frequently are protected by a substance containing caoutchouc. Very often leaves are enveloped in hairy growth, and sometimes they or the whole plant are covered by hairs so dense and matted together as to resemble thick flannel or blanket. Species of Lachnostachys and allied genera are striking examples of this.

Brilliantly coloured and strongly constructed blossoms, planned to attract pollen-bearing insects and birds in search of nectar, are sufficiently rigid to avert destruction by the insertion of the bill of a bird. Many striking types in the West Australian flora afford examples of varied methods of seed distribution and ingenious mechanisms by which effectual insect pollination may be secured. These characteristics are of intense botanical interest, and factors which add greatly to the fascination of botanical study in Western Australia.

Compositae, the world's largest family of flowering plants, is represented in Western Australia by over 50 genera and many hundreds of species, most of which bear flowers of "immortelle" type. The spectacle of vast areas of white, pink or yellow "everlastings" forming wide-spreading expanses closely covered with flowers of one colour, as seen on eastern sand-plains and in the Murchison district, is one not readily forgotten. A popular purple-flowered species of the genus Brachycome, though well distributed in all South-West coastal districts, is known as "Swan River daisy."

The West Australian flora is particularly rich in representatives of the Leguminosae family. With the exception of the acacias, of which there are over 300 species, these are of little economic value. Many are poisonous to a virulent degree and have to be eradicated from lands used for grazing stock. Leguminous plants frequently have

Emily M. Peller
1928

flowers of extraordinary beauty, and many species have been cultivated with conspicuous success. The acacias furnish good timber, tannin, and gums. Genera whose species are among the best known wildflowers of Western Australia are Hovea, Templetonia, Clianthus, Crotalaria, Isotropis, Burtonia, Daviesia, Kennedya, and Hardenbergia. Species of hovea, which bear beautous spikes of purple, pea-shaped blossoms are widely distributed, and flower freely in various districts from the beginning of winter to late spring.

The handsome elongated scarlet, black-centred Sturt's desert pea is one of Australia's glory flowers. The "Green-bird flower" of the North-West has spikes of emerald tinted blossoms which resemble vividly plumaged birds hanging by their beaks from the central stems. Templetonia, known colloquially as "Parrot plant" and "Cockies' tongues," grows freely as a sturdy shrub, with handsome long and comparatively narrow, red flowers which blaze like flashing fires in winter sunshine and brighten dull days, all along the western limestone coastal hills and inland from the south coast in certain rocky and gravelly places.

The best known Kennedya in the State is the "Red runner." Its scarlet blossoms are set singly on long trailing or creeping stems bearing at intervals groups of three handsome broad leaves. The "Coral creeper" is another favourite which covers bushes and shrubs with lovely pink clusters of bloom. It grows most luxuriantly in the Margaret River district. The "Black Kennedya" of the south coast district is a twining creeper. Though its native habitat is exceedingly restricted this species is easily cultivated and is a favourite garden creeper, flourishing almost anywhere. Purple Hardenbergia is commonly and erroneously called "Wild sarsaparilla" or "Blue Kennedya." It is a climbing plant of free growth which spreads lovely robes of royal purple high on tree tops or

Black Kennedya (*Kennedya nigricans*). One-third actual size.

over lowly shrubs and bushes. Its flowers, which are small and pea-shaped, hang in tapering clusters, and are seen at their best during the month of August.

Many species of Gastrolobium and three each of Oxylobium and Isotropis are poisonous to stock. These bear yellow and red blossom. *Isotropis striata*, its large flowers the "granny bonnets" dear to children, is dangerous to lambs, but apparently not to other animals. An illustrated Government bulletin invaluable to stock-owners, entitled "The Poison Plants of Western Australia," by D. A. Herbert, M.Sc., for some years economic botanist and pathologist in the Department of Agriculture, was published in 1921.

Myrtaceous plants are plentiful. They adorn the bush with many-stamened blossoms of varied hue and size. The genus eucalyptus, as in other parts of Australia, is predominant in forest flora. Among many West Australian species characterised by brilliant flowers, *E. ficifolia*, the "West Australian red-flowering gum," is the best known. Though native only to a small patch of country in the vicinity of Nornalup Inlet on the south coast, it is easily cultivated and is grown successfully in many parks and gardens throughout Australia. All cultivated trees come originally from seed gathered from wild specimens, whose flowers, so far as is known, are always bright red. The many shades of pink and white, appear apparently only in plants grown from seeds of cultivated trees—a theory being that hybridisation by bees is responsible, the species being crossed with a white-flowered variety known as "Marri" or "Red gum." This variation of colour is curious, as it does not seem to occur when the trees grow in a wild state in the forest, even when surrounded by many white-flowered gums. Seeds from cultivated trees can never be depended upon to produce plants with blossoms of a similar shade to those of the parent tree. There is a fine avenue of these gums in King's Park, Perth, where the flowers vary through sixteen distinct shades from white and pink to deep crimson. The sight of these trees in full bloom in January is something to remember.

Over forty species of verticordia, popularly called "Morrison," provide an amazing variety of flowering shrubs

and plants covered thickly at times with clusters of fluffy blossoms of different size and colour, with every section of individual perianths daintil fringe *Verticordia grandis*, the "Crimson verticordia," is a tall summer-flowering shrub bearing spikes of rich crimson flowers each an inch or more across. *Verticordia nitens* is known as "Christmas-bush." The straggly bushes in late December are a blaze of vivid orange flowers massed in large, flattish panicles of golden bloom, almost as brilliant as Nuytsia, the "Christmas-tree."

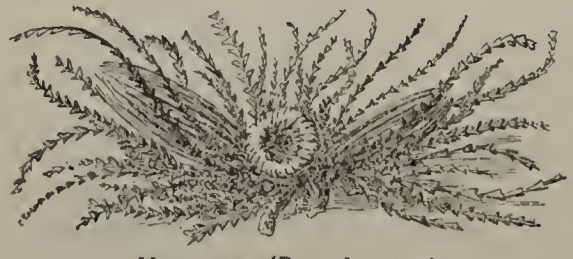
Hypocalymma robusta, a lowly little shrub bearing innumerable spikes of peach-pink blossoms, has more vernacular names than any other native plant in the State. These include: "Swan River myrtle," "Pink-all-the-way-up," "Bush myrtle," "Wild peach," "Pink heath," "Pink may," and "Monkey blossom." "Geraldton wax-plant" is a fine-leaved shrub with graceful clusters of pink flowers of waxy texture, that has become popular all over Australia as an easily cultivated garden plant, blooming freely throughout the winter. In a wild state it is plentiful in frequent patches all along the limestone hills bordering the sea coast from north of Geraldton to Bunbury. Many West Australian myrtaceous plants are of "bottle-brush" type. Among these are species of Callistemon, Melaleuca, and Beaufortia. Balaustion is a sand-plain plant of conspicuous beauty. Of creeping habit, its rich red flowers are set upright on the prostrate stems almost as if each one were rooted in the ground.

Geraldton Wax Plant.
Half actual size.

Another brilliantly beautiful sand-plain plant is *Pileanthus filifolius*, in habit somewhat like most species of verticordia, with small flowers of brilliant red, having black

anthers and yellow calyx lobes. When the crimson petals fall, the bushes appear to be covered with quite beautiful yellow blossoms. Western Australia possesses most of the Australian species of Baeckea, small heath-like shrubs with spikes of tiny pink or white flowers. The genus Calythrix is represented by numerous species, with flowers variously sized and coloured, all bearing characteristic long hairs pointing each lobe of the calyx.

Proteaceae is an order largely represented by many handsome and distinctive genera, such as Banksia, Grevillea, Hakea, Dryandra, Isopogon, Petrophila, Lambertia, etc. The flower-heads of about forty species of Banksia vary considerably in size and shape. The commonest kind, *B. Menziesi*, bears many gay red and yellow, acorn-shaped spikes. *B. grandis* is a handsome tree with foliage coarsely serrated like the teeth of a great saw. Its giant spikes of pale golden flowers often exceed a foot in length. A beautiful species, *B. coccinea*, whose scarlet and grey flower-heads sway like Chinese lanterns on tall prickly-leaved stems, is found inland from the coast in the Albany district. *B. attenuata*, a small-leaved tree, has pale yellow cylindrical spikes. "Holly-leaved Banksia" is a tall upright shrub, with flattish red and orange-stamened flower-clusters nestling among rosettes of prickly leaves. The prickly foliage of the "shaving-brush" Dryandra is brightened by innumerable creamy "brushes" centreing rosettes of stiff leaves. The yellowish flowers of a Dryandra of lowly habit (*D. nivea*) are known as "Honeycups." The large amount of honey secreted is typical of both Dryandras and Banksias which frequently are termed "Honeysuckles."



Honeycups (*Dryandra nivea*).
One-third actual size.

Among Grevilleas and Hakeas are found many shrubs and plants bearing gorgeous blossoms. "Native fuchsia" is a Darling Range plant of great beauty, with curious angular spiny leaves, much divided, and bright red flowers,

the perianth-tube dilated at the base and curling tightly at the tip, with very long style. A lovely pink Grevillea of somewhat similar type, but with large leaves (*G. bipinnatifida*), trails prostrate on the gravelly slopes of the hills. Among eighty species of Grevilleas and almost as many Hakeas, definite identification of species often puzzles all but expert botanists. The genus Conospermum includes the "Smoke-bush," whose light grey inflorescence when seen in the bush from a little distance resembles light clouds of drifting smoke. Some species of Conospermum are mistily and beautifully blue.

In *Boronia megastigma*, Western Australia has one of the world's sweetest scented flowers. The little brown and gold bell-shaped blossoms that swing from graceful slender stems exhale a perfume whose charm has occasioned its successful commercial capture. The sale of boronia in city streets and the wholesale systematic harvesting of the flowers in swampy South-West areas arouses concern as to the likelihood of speedy eradication in its comparatively restricted natural habitat. Western Australia has about forty species of boronia. Some of them are more beautiful than the brown variety, but none other has the same attractive scent, many, in fact, being distinctly disagreeable. The name "boronia" honours the memory of a young Italian botanist, Francis Borone, killed by an accidental fall when on a collecting tour in Greece, in endeavouring to reach a rare specimen. Crowea and "Pepper-and-salt" are popular plants also belonging to the Rutaceae family. Crowea flourishes in southerly coastal districts. Its starry white and pink flowers on long and slender flexible stems have great decorative charm. "Pepper-and-salt" is the best known Eriostemon in the State. Its dainty spikes of small pink and white shaded starry flowers are generally beloved.

The "Pitcher-plant" like the "Sundews," as the Drosera species are best known, is insectivorous. Many of the radical leaves of the pitcher-plant develop into colourful traps of great beauty, into which insects are enticed by attractive, sticky exudations, and imprisoned by the closing of a tight-fitting lid. The variously formed leaves of the

Sundews glisten with mucilaginous juices. Insects alighting upon them are seized and assimilated by hairy tentacles that are relentless in their devouring embrace.

Flannel Flower
(*Actinotus leucocephalus*).
Half actual size.

The lovely mauve Hibiscus favours gravelly soils all over a large portion of the State, sometimes ornamenting tall shrubs, sometimes adorning the swaying stems of a comparatively small and slender plant. It is one of thirteen classified species of the genus Hibiscus in Western Australia and worthy of a place in every garden where there is room for flowering shrubs.

"Blue lace flower" gems the rough scrub of coastal hills and Garden and Rottnest Islands in summer time with azure splashes of turquoise. Near it usually is found white-whiskered trails of snowy clematis, and never far away, patches of sapphire blue Lobelia. Closely related to the "lace flower," Western Australia's "Flannel-flower" spreads a soft expanse of creamy-white, daisy-like blossoms on inland sand-plains and in some gravelly places nearer the coast. Both belong to the Umbelliferae family, the umbrella-like construction of the flower-heads being a definite feature. The "Southern Cross," a treasure from the South, with white blossoms, connected in the form of a cross, terminating tough stems, is another near relative.

Southern Cross.
Half actual size.

The "Trigger-plants," of which Western Australia possesses no less than sixty of the eighty odd species of Stylidium in Australia, example one of Nature's ingenious methods of ensuring pollination. The sensitive trigger-like style, when touched by an insect—a possible pollen-bearer

—springs up and hurls the visitor unceremoniously against the stigma. Stylidiums range from wee plants to taller species bearing flowers of great beauty and such unusual form that they are often mistaken for orchids.

Trigger Plant
(*Stylidium*)
Half actual size.

West Australia's most popular wildflower is undoubtedly the blue Leschenaultia. Other beautiful species of this genus are the red *L. formosa*, which creeps like a thick mat of vivid vermilion, and *L. linaroides*, a straggling variety, common on the coastal limestone hills, with yellow flowers exquisitely tinged with crimson. The loveliness of blue Leschenaultia is indescribable. Its pure colour has no counterpart on earth—one has to look heavenwards for its equal. The blue-flowered genus Dampiera is akin to Leschenaultia, likewise the many varieties of Scaevola, their "left-handed" flowers perpetuating eternally the story of the young Roman who allowed his hand to be burned off at the bidding of Etruria's king, to prove his fortitude against torture when captured and brought to the camp of the enemy, rather than reveal the secrets of his own army.

Tassel Plant.
Half actual size.

Epacrids are represented in Western Australia chiefly by the genera Leucopogon, Styphelia, Andersonia, Conostephium, and Astroloma. Mostly the flowers of these are waxy or velvet-textured and white, with heath-like foliage, but species in some instances are colourful. In *Andersonia sprengeloides*, the closely clustered mature flowers and unopened buds are pink and pale blue. Some of the Astrolomas are delicately roseate and the white tubes of

Conostephium are tipped with deep crimson. The foliage of the crimson-flowered "Tassel-plant" is distinctive and decorative, striking always a definite note of beauty in the wondrous variety of leaf forms that make up the natural evergreen undergrowth.

The "Christmas-tree" of Western Australia, the root-parasitic *Nuytsia floribunda*, is one of the most gorgeous trees in the world. Its masses of flaming orange flowers crown and often exceed the dark and somewhat heavy foliage, radiating dazzling colour in the brilliant sunshine of December. Unfortunately the propagation of this beautiful tree is almost impossible. It is mostly reproduced in a natural state by suckers from long underground parasitic stems thrown out by the roots in search of victims and moisture. One of these stems was traced 120 yards from a tree at Como. Once abundant in the vicinity of Perth, the spread of the suburbs and the unconsidered swing of the vandal's axe have resulted in the eradication of most of the Nuytsias that once gilded the landscape from ocean beach to Swan River shores and from the river to the hills. That they cannot be replaced in gardens and parks is a pity indeed.

The Qualup Bell.
One-third actual size.

Many species of Pimelea, commonly called "Bush roses" or by the native name of "Bunjong," are conspicuous and beautiful in springtime. The largest flowered has white, pink-tinged heads composed of innumerable small four-lobed, tubular blooms, set in creamy fluff—puffy balls which nod and sway gracefully on slender stems with stiff, pointed leaves set evenly in pairs. Other varieties are mostly pink or yellow in various shades, with some sweetly scented. One species, found only in the southerly part of the State, is known as the "Qualup bell." Its great bell-shaped flowers are a delicate greenish-yellow colour, splashed and flushed with crimson.

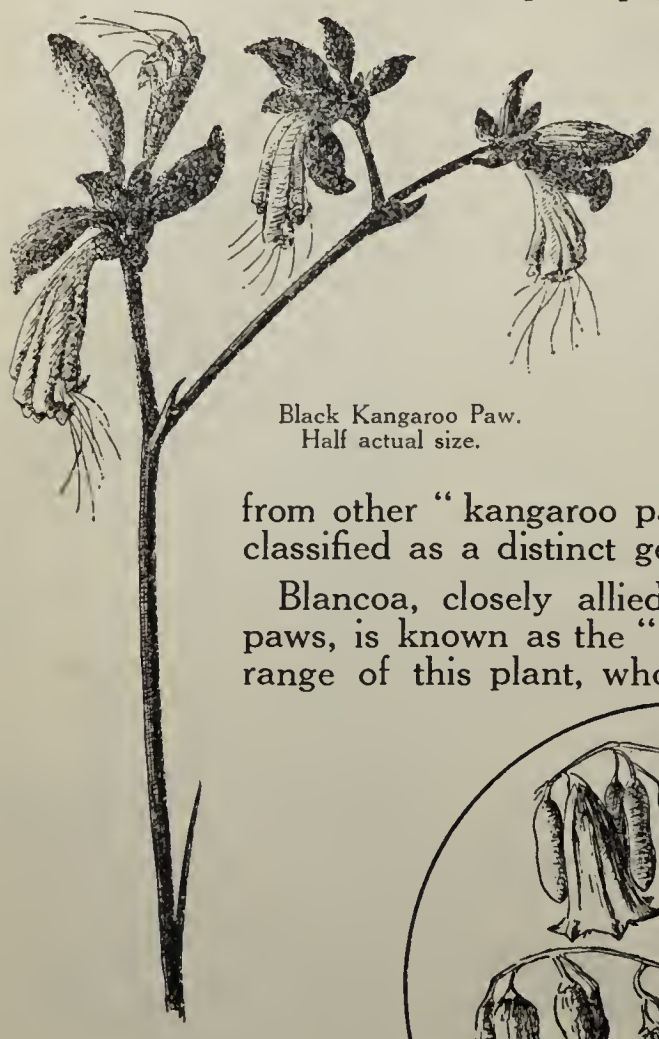
Western Australia possesses over a hundred orchids. With the exception of one or two collected in the tropical

north, all are terrestrial. They are exceedingly lovely with unobtrusive, delicate charm that fascinates collectors. The genus Caladenia is largely represented by many endemic species, usually of "spider" type. The large white "spider orchid," with its lengthy petals, thread-like towards the tips, and broad pink-fringed lip, curling under at the tip, is one of Nature's triumphs. Other Caladenias show marked differences of form and colour. They include the yellow "Cowslip orchid," sapphire "Blue orchid," wide-lipped "Butterfly orchid," and the long-leaved "Pink orchid," orchids with their white or creamy-yellow surfaces delicately streaked and veined with crimson, hinged lips a-tremble, others resembling bees, and some in various tones of mauve, deepening to purple, white, and opaque, or transparent as crystal. The "Greenhoods" afford the natural history student much opportunity for observation, likewise the curious "Hammer orchids," all species possessing unique methods of fertilisation certainty. Two Glossodias, one pink, the other purple, are so shiny-surfaced they are known as "China" or "Enamel orchids." Then there are the curious "Leek-leaved" and "Mignonette orchids." These bear spikes of apparently inconsequent bloom, but the beauty of individual flowers seen through a magnifying glass is striking. Varieties of Thelymitra are robust in habit and exquisite in colour. The yellow and brown "Donkey orchid" is a popular favourite among species of Diuris.

Hammer Orchid. Half actual size.

The "Kangaroo paw" is the national flower of Western Australia. There are eleven distinct species, of which the tall red and green paw is the best known. The curiously shaped bright green flowers—the unopened buds resembling markedly the lower part of the hind leg of a kangaroo—cluster quaintly somewhat like the string-screws of a fiddle-head, at the top of ruby red plush-like stems springing from clumps of stiff pointed leaves. Smaller species have a strong tinge of yellow in their green, while lowly plants have orange and red flowers. One beautiful variety

is emerald green with no red; another is ruby red and branched, as are some of the rarer variously coloured types. Most unusual of all, perhaps, is the handsome "Black kangaroo paw." This really is green, a clear sharp shade, but a heavy coating of dense black hairs obscures the verdant hue of the unopened buds and tinges darkly the mature flowers. These are sufficiently distinct from other "kangaroo paw" species to be classified as a distinct genus.



Black Kangaroo Paw.
Half actual size.

Blancoa, closely allied to the kangaroo paws, is known as the "Winter bell." The range of this plant, whose orange and red shaded flowers gleam brightly in the rainy season, is limited to the flats below the western slopes of the Darling Range extending for several miles east and west of Maida Vale, the locality where the winter bells are most plentiful. Other closely related genera of hairy-flowered plants, are Conostylis and Tribonanthes.

Winter Bells.
Half actual size.

FLORAL GLORY

Many wildflowers beloved in Western Australia belong to the "Lily family." The best known of these are two species usually found growing together, the white "Wax," *Burchardia umbellata*, and the purple "Sour beer," which gets its unattractive vernacular name from the literal sound of its botanical one, Sowerbaea, honouring an eminent British botanical artist and naturalist. Another genus with over a dozen species familiar to those who traverse the bush in the morning, is Thysanotus, the flowers of which are commonly known as "Fringed lilies." Sometimes the dainty mauve, three-cornered flowers are poised like hovering butterflies on long, slender stems, while in one instance many flowers cluster compactly like an early Victorian posy. Another species spreads, net-like, over bushes and shrubs, the wiry, leafless trailing stems closely set with rather small flowers, their three silken-textured petals as thickly fringed as those of larger flowered varieties, and narrow white sepals as deeply streaked with purple.

Wax and Sour Beer.
Half actual size.

Of all West Australian wildflowers that apparently make effort, more or less futile, to survive the encroachment of buildings and damage by passing traffic, none dies so hard as the purple Patersonia. Clumps of Patersonia still flourish in many suburban back yards and on city and suburban vacant allotments, where once other bush flowers bloomed and faded in peaceful seclusion as seasons changed. The yellow iris of the south-west, *Patersonia xanthosia*, is less hardy. The "Morning-flower," *Orthrosanthus Muelleri*, opens out six spreading bluish-mauve perianth segments only in forenoon sunshine. "Morning-flowers" make pleasant patches of soft colour in the hills, the valley of the Swan, and in the extreme south-west of the State.

Native Iris (*Patersonia*).
Half actual size.

Western Australia has few ferns, under twenty species in all. One variety of "Maiden-hair," *Adiantum aethiopicum*, grows freely in shady damp spots. Bracken is plentiful, and various rock ferns are found in hilly and mountainous places. Fossil traceries, however, found on rocks in the Mingenew district, indicate a past age when ferns flourished in areas now devoid of the moisture in atmosphere and soil necessary for their luxuriant growth. Zamia palms, *Macrozamia Fraseri*, interesting examples of primitive forms of plant life, and "Blackboys," *Xanthorrhoea Preissi*, their sturdy trunks surmounted by curious but graceful foliage, add infinite charm to West Australian forest scenery, a striking feature of which is the perpetual green of the undergrowth when undisturbed by man beneath mighty eucalypts, shady banksias, she-oaks, paper-barks, sandal-wood, acacias, and cypress pines.

Many volumes would be necessary to do full justice with pen and pencil to the richness and variety of the West Australian flora, pronounced by many competent authorities to be the loveliest in the world. A hundred years hence, when Western Australia is celebrating her Bi-centenary, many of the plants now familiar to most inhabitants of the State may be known only by name through the records industriously compiled since the earliest day of British settlement.

Gum Nuts. Half actual size.

The Eastern Wheat Belt sand-plains, for instance, sole habitat of hundreds of precious species, are fast being devastated without reserve in the interest of agriculture. It may be that in 2029, regret will be expressed that so little effort was made as far back as 1929 to ensure the preservation of the rare and beautiful flora. To deny future generations the right to enjoy its wonders is to deserve the censure of the unborn.

XII: A FASCINATING FAUNA.

IT IS not surprising that a country like Western Australia with its million square miles of territory and wide range of temperature and rainfall should fail to show a well-marked unity in its animal life.

In the north, tropical Kimberley cannot be separated faunistically from the adjacent Northern Territory, and much of the rest of the State shows an intimate connection with the Australian Eremaea, which occupies the whole of the centre of the continent. As this region approaches the western coast the influence of a more abundant rainfall is soon reflected in the constitution of the fauna, and near the rabbit-proof fence it gradually passes into that essentially Australian territory, the South-Western Zoological Province. Many of the inhabitants of this area are peculiar to it, but others show a marked and significant affinity to the forms living in the more humid parts of Eastern Australia and the islands off the South Australian coast.

In the northern and eastern portions of the continent there are abundant evidences of a very recent and still active "Papuan invasion" that can also be noted in the Kimberley District, but to the south of this outpost of the Northern Territory further progress is prevented by that arm of the Eremaea which reaches the ocean at the Ninety-mile Beach. With one or two exceptions Malayan and cosmopolitan insects have been unable to cross the barrier, and it would seem that the noxious fruit-eating bats, which in Eastern Australia range as far south as Victoria, are kept from our South-Western orchards by the same deterrent. More striking still is the complete absence from the south-west of the Papuan element in the Australian avifauna such as the cassowary, the fruit pigeons, the bower birds, the ant thrushes (Pittas), and the rifle birds.

Knowledge of certain members of the Western Australian fauna goes back many years before the foundation of the Colony in 1829. By the middle of the seventeenth century the Dutch navigators had made their first acquaintance with the Australian marsupials on Rottnest Island, and before its close Dampier had observed many of the birds living on the north-west coast, and Vlaming had taken away four living black swans, a pair of which survived for some time at Batavia, the capital of the Dutch East Indian Empire. For nearly a hundred years no new information was acquired until Captain George Vancouver discovered King George III. Sound in September, 1791. He noticed black swans and pelicans, together with a dead kangaroo, whales, seals, a few lizards, and "two or three yellow and bronze-coloured snakes which were good eating."

Black Swan.
One-fifteenth natural size.

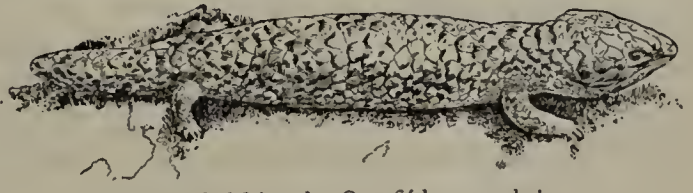
Leadbeater's Cockatoo.
One-fifth natural size.

The French vessels "Recherche" and "Esperance" reached these waters the following year. Riche was lost in the bush near Esperance Bay, and in his long ramble, which ultimately brought him back to the beach, saw three grey kangaroos, whose habits he describes, and a dingo—"a carnivorous animal of the genus or at least the family of dogs" which would appear from its footprints to be at least as large as a wolf. It is interesting to recall that Leadbeater's cockatoo was also noticed "in flocks of many hundreds."

Two other French ships, the "Geographe" and the "Naturaliste," reached the south-west coast on May 27, 1801, and instead of following their predecessors along the south coast, these investigators sailed northwards. They carefully examined Rottnest and discovered Ile Berthellot (Carnac) and Ile Buache (Garden Island) on their way. They also ascended the Swan River beyond the Heirisson Isles, where they first met the black swans.

The islands in Shark Bay yielded many specimens of the banded kangaroo (Munning), whose habits the careful naturalist Peron described in great detail. He states that when pursued the mother will throw the young from her pouch but adds that when the hunt is over and she has escaped unscathed she will return to the spot where the young one was left. Calling it with a kind of grunting which is peculiar to them and caressing it affectionately as if to dissipate its alarm, she will seek to induce it to return to the pouch so that she may at last take it to a place of safety. This party devoted more time to shore and land collecting than earlier ones had done, and so reaped richer spoil, the treasures including a stump-tailed lizard as well as a number of skinks and geckoes.

About this time Flinders surveyed the south coast from King George Sound to the head of the Bight. Kangaroos were numerous and seemed to resemble the large kinds inhabiting the forests near Port Jackson, "and the cassowary (emu) showed nothing distinguishable at a distance from the same animal at that place." Many birds were noted and several huge nests described, which were probably built by species of eagles, most likely the sea osprey.



Stump-tailed Lizard. One-fifth natural size.

On a second visit the "Geographe," now accompanied by the "Casuarina," spent some time near King George Sound. As before, many marine creatures were collected, including fish, whilst trips ashore yielded a "charming new species of the genus Hyla, the only frog,

except those of Port Jackson, which I saw in New Holland." Three species of lizard were obtained and a poisonous snake about six feet in length. In Geographe Bay the "Casuarina" found many dead whales floating on the surface of the water, and on Peron Peninsula, in Shark Bay, the landing parties were mercilessly pursued by hosts of little biting flies.

Tammar.
One-twelfth natural size.

Captain P. P. King in charge of the "Mermaid," and accompanied by the famous botanist Allan Cunningham, and Messrs. Bedwell and J. S. Roe, reached the Recherche Archipelago on January 16, 1818. The tammar inhabiting some of the islands was seen but not secured, and many Cape Barren geese were observed on Goose Island. Near King George Sound Cunningham saw a black snake (Norne), but was unable to secure it, and though kangaroos were met with they were too wary.

Emu.
One-thirtieth natural size.

After leaving the sound they did not sight land again until they reached the North-West Cape, where they carried on survey work as they proceeded north and east. Remains of kangaroos and emus were found in blackfellows' camps, and pelicans and other waterfowl were present in enormous numbers on some of the shoals. One of the large sea eagle's nests was found on Lewis Island and on the adjacent mainland Cunningham measured some of the immense anthills which were eight feet high and no less than 26 feet in circumference. One that was opened proved to be deserted by its original inhabitants, but turned out to be a secure refuge for a goanna which was being chased by one of the party.

King's second visit of 1819 added little to our knowledge,

but the third of 1820 was more fruitful. Near Brunswick Bay Cunningham saw a small kangaroo among the spinifex, whilst other members of the party added to the list a larger greyish kangaroo, opossums, smaller than the southern species, a spotted native cat, and many bats. At Careening Bay some birds were seen, a snake seven feet long was missed at York Point, and the rivers teemed with "alligators" (crocodiles). That strange reptile, the frilled lizard, perhaps the most remarkable of Australian lizards, was recorded for the first time.

Opossum.
One-tenth natural size.

In the following year King paid his fourth visit in the "Bathurst." He left Port Jackson on May 26 and arrived at Cassini Island, on the Kimberley coast, on July 13. The previous survey was extended. Many small kangaroos and kangaroo rats were seen skipping about the rocks. On the Prince Regent they met the quaint mud-skippers, fish which seemed to spend the greater part of their time out of water but which could bury themselves in the mud like a flash when alarmed. "When sporting on the mud these fish use their pectoral fins like legs upon which they can move very quickly."

At the end of the year the vessel was at King George Sound, and later proceeded to Rottnest, where traces of small kangaroos were very abundant, but no animal was seen. Shore birds were in flocks and many were shot for food. Seals were abundant in those days, being plentiful everywhere the vessel called. When the "Bathurst" put into King Sound one of the boat's crew caught a species of vampyrus, apparently similar to the flying foxes of Port Jackson, a pest of the fruit garden which fortunately has not yet made its way to the south-west.

Quoy and Gaimard, who had already visited Western Australia with Freycinet, paid a second call in the "Astrolabe" during 1826. As usual, most of their time was

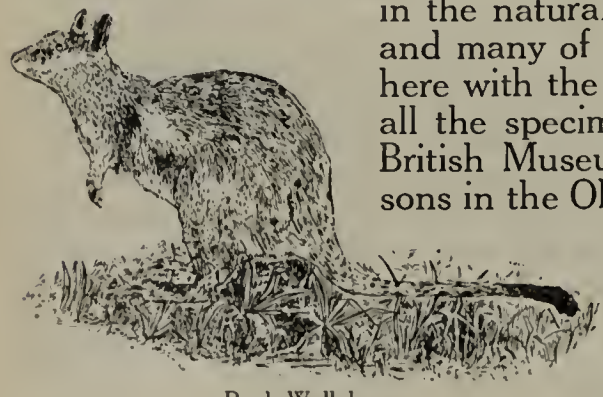
devoted to marine collecting, but they obtained bandicoots and quokkas at King George Sound together with many birds of which some were new, such as the dusky robin, white breasted shrike robin, banded wren, the red-capped king parrot, and the twenty-eight.

Wambenger.
One-sixth natural size.

At the end of 1826 Major Lockyer landed in King George Sound. His diary gives much general information which is rendered more useful by the subsequent paper by Dr. Scott Nind, published in the first volume of the *Proceedings of the Royal Geographical Society* in 1832. By means of the native names there quoted it is possible to identify many of the creatures mentioned by the Major, to learn more about the reptiles and something about the frogs.

Up to this time 11 species of land mammals, 31 of birds, and four of terrestrial reptiles had been described by specialists and had received scientific names. This was slow progress for two centuries, but science was in its infancy, and many obstacles were presented by unfavourable conditions and lack of knowledge.

With the foundation of the Colony in 1829 and the arrival of settlers, knowledge of the country's wild life increased by leaps and bounds. The Governor himself was interested in the natural history of the Colony, and many of the early officials came here with the intention of collecting all the specimens they could for the British Museum and interested persons in the Old Country.



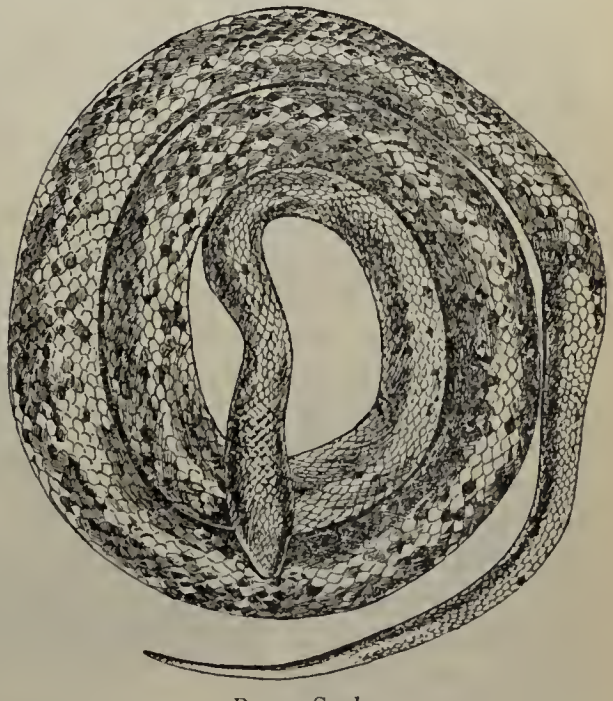
Rock Wallaby.
One-tenth natural size.

G. Fletcher Moore, Lieut. Geo. Grey, Lieut. Dale, and Surgeon Collie were keen observers and enthusiastic

collectors. Most of these confined their attentions to the south-west, but the activities of Lieut. Grey included explorations in West Kimberley which resulted in the discovery of several species of kangaroo, wallaby, and smaller marsupials not previously known to science.

Numbat.
One-seventh natural size.

In 1836 Mr. Waterhouse exhibited before the Zoological Society the first known specimen of the numbat, and later in the year Mr. Reid brought to the notice of members another new species, the dalgite, with the note "a friend of Mr. Gould's residing in Western Australia states that these animals are found beyond the mountains of Swan River in the district of York."



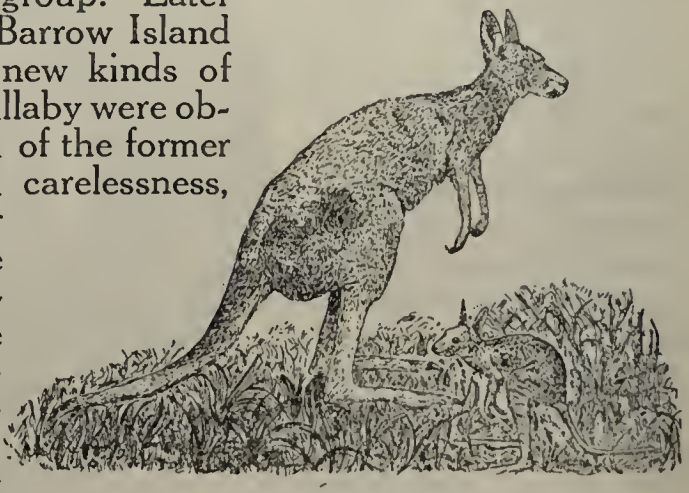
Brown Snake.
One-third natural size.

Among the birds noted were eagles, hawks, owls, and geese. Grey described the remarkable playground of the bower bird, and has a good deal to say about that strange nest building relative of the common cuckoo, the pheasant coucal, which was found to be plentiful in the vicinity of the Glenelg. A frilled lizard was obtained, and a large goanna, five or six feet long, escaped by running up a tree, where it sat making a noise, somewhat like a snake. A curious moving, misshapen object seen one day was found to be a large python, eight and a half feet long, which had swallowed a young kangaroo.

Meanwhile the "Beagle" was exploring part of the northern coast line. Many flying foxes were seen, and the landing parties obtained a specimen of the curious nail-tailed wallaby which, like the wurrung of our South-west, the dalgite, and the lion, has a "singular appendage of a nail, like that on a man's little finger, attached to the tail."

Stokes records many birds, pigeons, quail, wild-turkey, curlew, and ibis, as well as cockatoos and finches. But he, like so many other visitors, complains of the super-abundance of flies: "The flies are at you all day long, crawling into your eyes, up your nostrils, and down your throat with the most irresistible perseverance, and no sooner do they give up the attack, than they are relieved by the mosquitoes."

In 1840 the vessel surveyed the Houtman Abrolhos Islands and on West Wallaby Island collected a number of specimens which proved to be distinct from the tammar of the mainland, as well as from the wallabies occurring on many islands further south. Curiously enough nothing was said about the native rat, which is also known to inhabit part of the group. Later in the same year Barrow Island was visited, and new kinds of kangaroos and wallaby were obtained. The skin of the former was lost through carelessness, and no further specimens were available for specialists until the Western Australian Museum organised an expedition to collect there some thirty years ago, when various other species of wild life, several of them new to science, were added to the Museum collection and subsequently distributed to the principal Museums of England, Europe, and America. The Montebello Islands yielded the



Grey Kangaroo.
One-twenty-fourth natural size.

spectacled hare wallaby, and like Barrow Island, remained practically a *terra incognita* until the P. D. Montague Expedition, again organised by the Museum, yielded much valuable material in 1912.

These collections were gradually finding their way to Europe, where the species new to science were described and named by specialists. At the November and December meetings of the Zoological Society in 1840, Gould described no less than 50 new species of Australian birds, of which 26 came from Western Australia. The exact procedure adopted is often difficult to discover: some specimens were sent to Gould by his famous collector, Gilbert, who travelled extensively in the south-west; others reached the British Museum from Grey, Wickham, Stokes, and others, or through the naval authorities in England. The information is scattered through many publications and periodicals and would entail an enormous amount of reference and research.

One of the most remarkable overland journeys ever satisfactorily completed, that by Eyre from Adelaide to King George Sound, was of distinct scientific value, for Eyre made collections of natural history objects which were subsequently examined and described by John Edward Gray, Dr. Richardson, Adam White, Doubleday, and Gould. Bats, birds, reptiles, frogs, fishes, insects, and crayfish, many of them new to science, were placed in the hands of these experts and subsequently preserved in London.

Wurrung.
One-tenth natural size.

During the next decades John Septimus Roe, the Gregory brothers, Giles, Forrest, and others traversed the unknown land in all directions, but the hardships they had to endure and the scanty opportunity they had of preserving and carrying perishable specimens prevented them from adding much to the knowledge of the fauna of the parts they visited. Among the explorers of the early Victorian period the name of Surveyor Austin stands out prominent. In spite of the difficulties he had to contend

with he managed to make a small collection which ultimately reached Perth in safety. It is of great value to learn that in 1854 the pig-footed bandicoot, the nest-building rat, the wurrung, and the hare wallaby were plentiful in districts where they are now quite extinct, and it is almost certain that their disappearance is not due to the action of the settlers but to one of those inexplicable calamities that now and again decimate wild animal communities.

The Museum, which dates back to the early nineties of last century, lost no time in taking up the work that had suffered through lack of interest and opportunity. In 1894 Mr. O. H. Lipfert, the present taxidermist at the Museum, visited the Abrolhos and later in the year Mr. John T. Tunney commenced those extensive series of collecting expeditions that will always link his name with the zoology of Western Australia. In the course of the next ten years he traversed much of the south-west, the Murchison, and the Pilbara District; he visited most of the accessible islands between Bedout in the north and the Recherche Archipelago in the south-east, collecting thousands of specimens and discovering scores of mammals and birds that later proved to be new to science.

Mallee Fowl.
One-eighth natural size.

In 1902 the present Lord Rothschild co-operated with the Museum in financing further activities during which much of the North-West, East and West Kimberley, and many parts of the Northern Territory were systematically examined. Rich harvests rewarded Mr. Tunney's labours, and as a slight reward his name is associated with some of the interesting mammals and birds he made known to

the world. He discovered about 30 new mammals and more than 200 new birds. Mr. Lipfert made several shorter trips, which included Shark Bay, Dorre and Bernier Islands, Rottnest, and several localities in the south-west. Mr. Lawson Whitlock visited many districts in search of birds and their nests and recorded his results in the *Emu*.

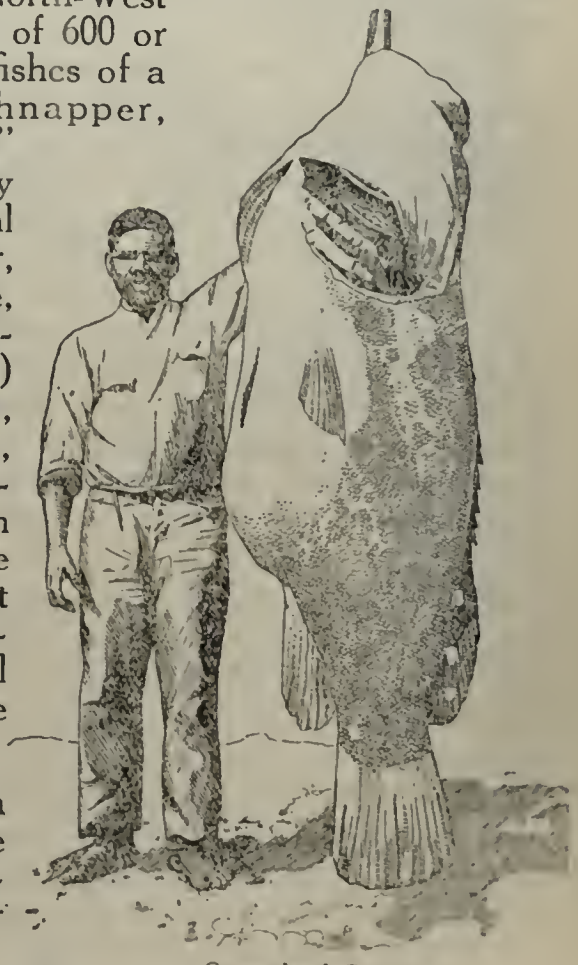
Foreign collectors now began to give their attention to this part of the Continent. Dahl collected in West Kimberley; Michaelsen and Hartmeyer traversed much of the South-West and visited Shark Bay; Dr. Eric Mjoberg's Swedish Expedition was in Australia from 1910-1912 and the American, C. Hoy, collected extensively just prior to the outbreak of the great war. Masters and Froggatt, Conigrave, P. D. Montague, Professor Dakin, W. B. Alexander, and L. Glauert undertook less extensive journeys, all of which added their quota to the rapidly accumulating mass of knowledge.

Much remains to be done before the advance of settlement puts an end to the opportunity, but the results already obtained, chiefly as the fruit of the activities organised by the local Museum, show distinctly that Western Australia is not a faunal unit. The boundaries of the regions have not yet been established, and it is one of the tasks of the future to complete the gigantic labour so ably inaugurated by the late Bernard H. Woodward nearly forty years ago. Work of this kind cannot be undertaken without funds, and it is devoutly hoped by all naturalists that in the near future Government grants or private benefactions will enable this important piece of research work to be resumed and completed.

XIII: THE WEALTH OF THE WATERS.

WESTERN AUSTRALIA possesses a rich and varied fish fauna, and of the, approximately, eighteen hundred species known to occur in Australian and Tasmanian waters a very large proportion is found here. No doubt, many more await discovery, as the deeper regions of the seas remain practically unexplored.

Among the better known species—which range in size from the enormous Queensland groper (commonly known as the rock-cod on the North-West coast), attaining a weight of 600 or more pounds, to the garfishes of a few ounces—are the schnapper, black-bream, "jewfish," Spanish mackerel, trevally (skipjack), mullet (several species), whiting, tailer, flathead, flounder, sole, Australian salmon, Samson-fish (sea kingfish) "kingfish," tassel-fishes, dart, John Dory, nannygai, garfishes, rock-cod, Sergeant-baker, Tommy-rough (herring), etc., but there are many others of great importance from an economic point of view, as well as those of interest to the lover of Nature.



Queensland Groper.

Practically all the fish disposed of throughout the State is captured by ordinary seine or hauling net, or

by hand lines. No serious attempt has been made to exploit the resources of the ocean by means of the otter trawl from suitable trawling vessels. Unfortunately, owing to the loss of the Federal investigation vessel "Endeavour" off the Tasmanian coast during November, 1914, and to the subsequent loss of the State-owned "Penguin," but a small portion of the potential trawling ground has been explored. From the operations of these vessels it is known that in the Southern regions, at least, there is an extensive and prolific field from which large supplies of fish of excellent size and quality may be obtained.

In the Northern waters about the latitude of Shark Bay schnapper, mullet, whiting, tailer, and many others are identical with the Southern types, but in the still higher latitudes the Southern species are, in many instances, replaced by a fish fauna corresponding with that of the Queensland coast. These waters, so rich in fish-life, present opportunity for the establishment of a permanent industry. Within a few days' sail from large centres of population, a demand exists for practically unlimited supplies of dried and salted fish, and, provided this fish is prepared in a manner suited to the tastes of these people, a satisfactory trade may be developed.

From the angler's point of view, the waters of the State are full of attraction. To those who desire to test their skill against the larger species—sharks, rays, saw-fish, spear-fish, bonito, Spanish mackerel, tassel-fishes, etc. —the North-Western coastal waters offer an extensive and sure field, while to others the coastal and estuarine waters of the West and the South provide excellent sport.

In the present-day fisheries about 537 fishermen and 245 fishing boats are employed, the value of boats and equipment being about £40,327. Fish to a value of about £92,000 is captured and sold annually.

The crustaceans which at present find a place in the fisheries of the State are :— Three species of crayfish or spiny lobster of the genus *Palinurus*. Different species of prawn of the genus *Penaeus*, of which the principal are—(1) The school prawn, (2) The king-prawn, and (3) The tiger-prawn ; and several species of the swimming crab, of which

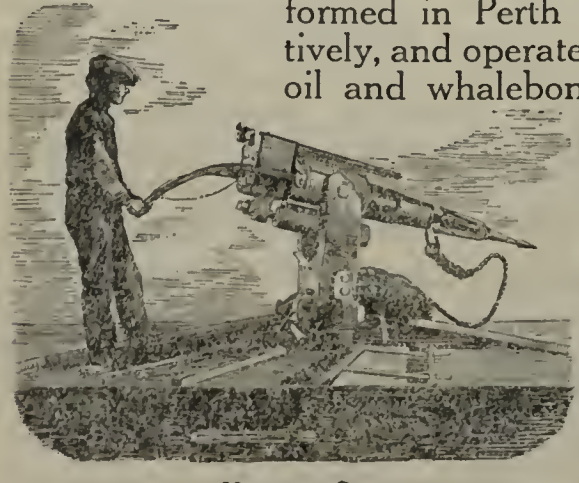
the principal is the blue swimming crab. In addition, there are several species of freshwater crayfishes and shrimps.

A Freak Crab with shells attached.
About one-third natural size.

Of the crayfishes, the principal from the commercial aspect is that known scientifically as *P. penicillatus*, which is found in great numbers from as far North as Carnarvon to the vicinity of Albany. Over 130,000 crayfishes are marketed annually.

Different cetaceans roam the waters of the sea-board, but commercially, under present-day conditions, the more important are the humpback and the sperm whale. Among the dolphins, the most abundant form is the common porpoise—so-called.

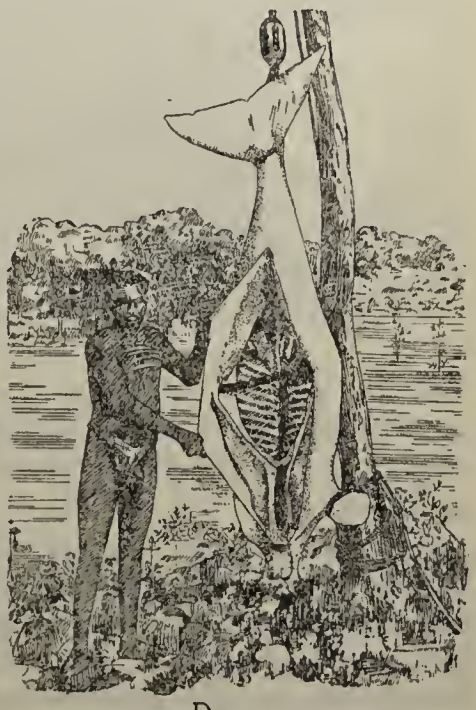
Back in the 18th century, before Western Australia was founded, whaling was carried on in the South and South-Western waters by visiting American and French whaling vessels. Later, early in the "Forties," companies were formed in Perth and Fremantle, respectively, and operated for some time. Whale-oil and whalebone appear in the lists of exports up to 1884.



Harpoon Gun.

Modern whaling—the employment of fast steamers equipped with harpoon guns—was first undertaken in the coastal waters during 1913, by Norwegian companies, registered under the company laws of the State, and with headquarters at King George Sound (Albany), and Norwegian Bay (Point Cloates). A shore station and factory were erected at each place, and during the years 1913-16, inclusive,

more than 4,000 whales, producing over 130,000 casks of oil and about 1,500 tons of fertiliser to a value of about half a million pounds sterling, were secured. In 1916, owing to the war, operations were discontinued, but in 1922 a local company acquired the property and equipment at Point Cloates, and worked during the seasons of 1922 and 1923. In 1925, operations were again undertaken, with highly satisfactory results. Over 650 hump-back whales were taken, providing oil and fertiliser to a value of about £120,000. The results of the 1926 and 1927 seasons were more successful. During the former, 740 whales were captured, while in the latter the "take" was 999 whales. The total quantity of oil obtained was 52,840 barrels, and 908 tons of fertiliser were prepared. A conservative estimate of the value of the two years' output is £235,000. In the season of 1928, 1,036 whales were secured. These are said to have produced about 36,000 barrels of oil to a value of about £180,000.



Dugong.

The hump-back whale is a regular visitor, making its appearance in Southern waters—East of and in the vicinity of King George Sound—during May of each year. This visitation is undoubtedly the beginning of a periodic migration, and, in all probability, those appearing in the Southern coastal waters are detached members of the main "school" which later, during June and July, finds its way to the warmer waters of the North-West coast, to return South during September-October.

The sperm, as far as is known, does not visit the North-West coast waters. Its feeding grounds are the deeper waters off and about the edge of the Continental Shelf some 40 to 50 miles south of King George Sound. In this vicinity very large "schools" are found practically throughout

the year. Many of the species were secured during the operations of the Norwegian companies previously referred to, some of the " bulls" being of huge proportions.

The Point Cloates fishery depends almost entirely upon hump-backs, while from the Albany " grounds " both hump-backs and sperms, with an occasional right-whale,

Dugongs.

may be taken. At present only one whaling company is operating, but three additional licenses have been granted, and the near future may witness increased activity in this industry.

In the warmer waters of the North-West coast that highly interesting and undoubtedly valuable herbivorous mammal, known as the dugong, abounds. This creature is found in lesser or greater numbers from as far South as Shark Bay to the northernmost point of the State, and is now sought mainly as an article of food, its flesh being of excellent quality. The dugong grows to a length of eight or more feet, and, apart from its flesh, produces an oil which possesses high medicinal qualities. Its hide is of rare thickness, and should be turned to good use as leather.

Of the typical marine turtles, the three species distinctly characterised by zoologists—the green turtle, the hawks-bill, and the loggerhead—are found in Western Australian waters. Of the three, the green (or edible) and the hawks-bill are the more valuable commercially, the former for its

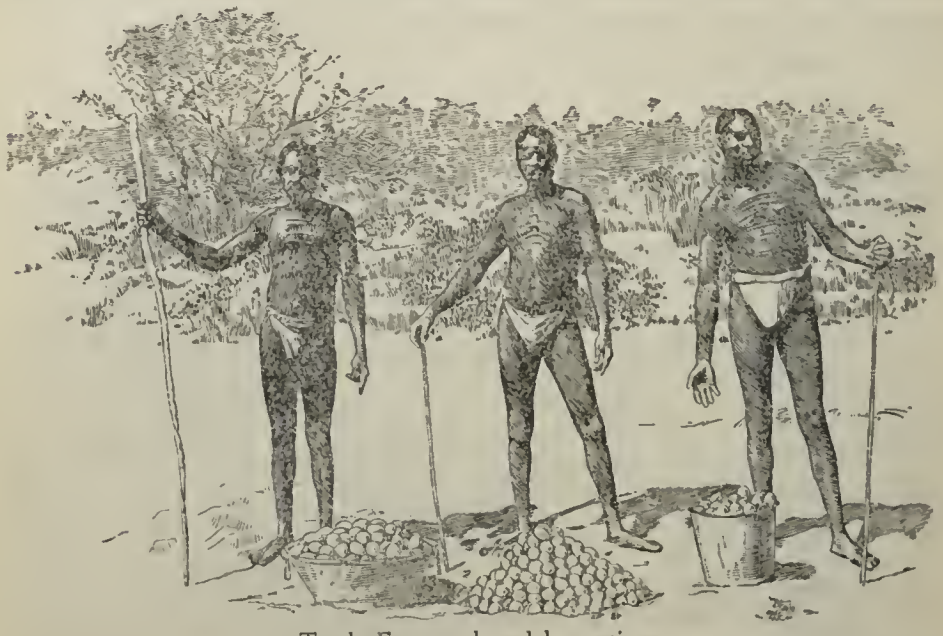
edible qualities, the latter owing to the beauty and quality of the horny shields developed on the surface of the carapace. This material is known as tortoise-shell, from which are made many beautiful articles such as hair-combs, bag-tops, fans, etc.

Turtles returning to Sea.

Green and hawksbill turtles range over practically the whole of the North-Western coastal waters. The first variety is found as far South as Shark Bay, but the latter frequents the warmer waters North and East of North-West Cape. During recent shark-fishing operations conducted at Carnarvon about 350 large green turtles were taken by net, suggesting that this method of capture may play an important part in future operations. Small quantities of hawksbill turtle shell are exported from the State annually.

The sponge fauna of Western Australia is a very large one, and there is a prospect of a sponge fishery being established in the not far distant future. A number of species are suitable for domestic purposes, while others are adapted for use in various trades. Many grow to a very large size. At practically every part of the coast fine sponges in large quantities are washed ashore after storms.

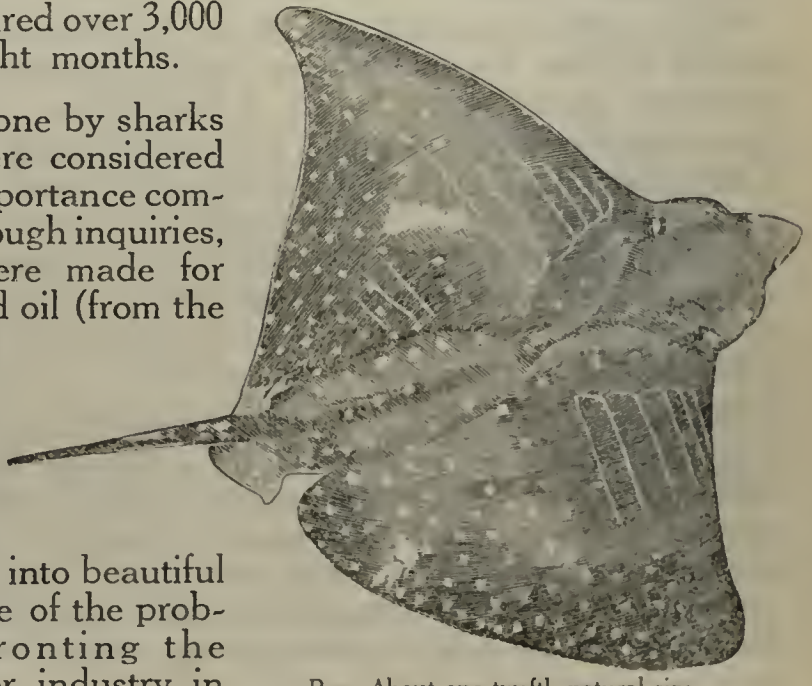
Numerous species of sharks, and rays of many families frequent the coastal waters, and some attain huge proportions. In some of the warmer waters they appear in



Turtle Eggs gathered by natives.

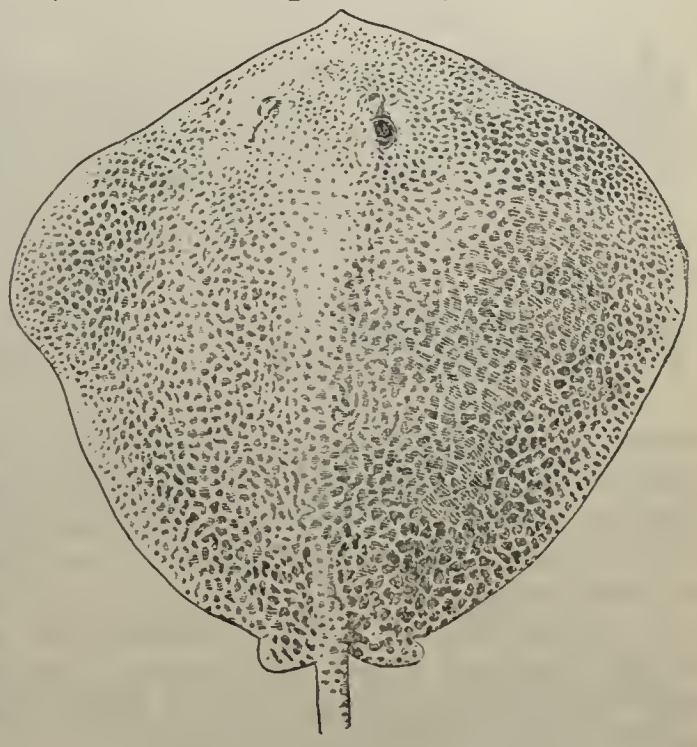
such numbers that thousands may be captured annually. At Carnarvon recently a company operating with nets and set-lines secured over 3,000 in about eight months.

In times gone by sharks and rays were considered as of little importance commercially, though inquiries, at times, were made for their fins and oil (from the livers). It is now recognised that the skins, if correctly treated, may be converted into beautiful leather. One of the problems confronting the shark-leather industry in



Ray. About one-twelfth natural size.

other parts of the world is that of securing the necessary quantity of skins to meet the ever-increasing demand. In addition to the oil, fins, and skins, shark-flesh, when properly treated and dried, finds a ready sale in markets adjacent to Western Australia. Of the species known to occur, mention may be made of the tiger-shark, grey-nurse, blue-pointer, white-pointer, saw-fish, hammer-head, whaler, school-shark, blue-shark, wobbegong, angel-shark, Port Jackson-shark; while amongst the rays the following are of interest:—shovel-nose, common sting-ray, thorn-tailed stingray, eagle ray, fiddler, giant stingray, and spotted eagle ray.



Ray.
About one-fifteenth natural size.

There appears to be scope for the development of seaweed industries along the coast. At present nothing is done, but the future may demonstrate the economic importance of our varied marine flora, which, in other parts—Scotland, Ireland, France, and Japan—is considered of such value.

Broome, Port Hedland, Cossack, and Onslow represent the principal centres of pearling operations in the North-West, but further South—at Shark Bay—there is a fishery which year in and year out provides employment and support for between 50 and 100 persons with their wives and families. These two pearl-shell fisheries are distinct in locality, in the species of shell fished, and in the methods of collection.

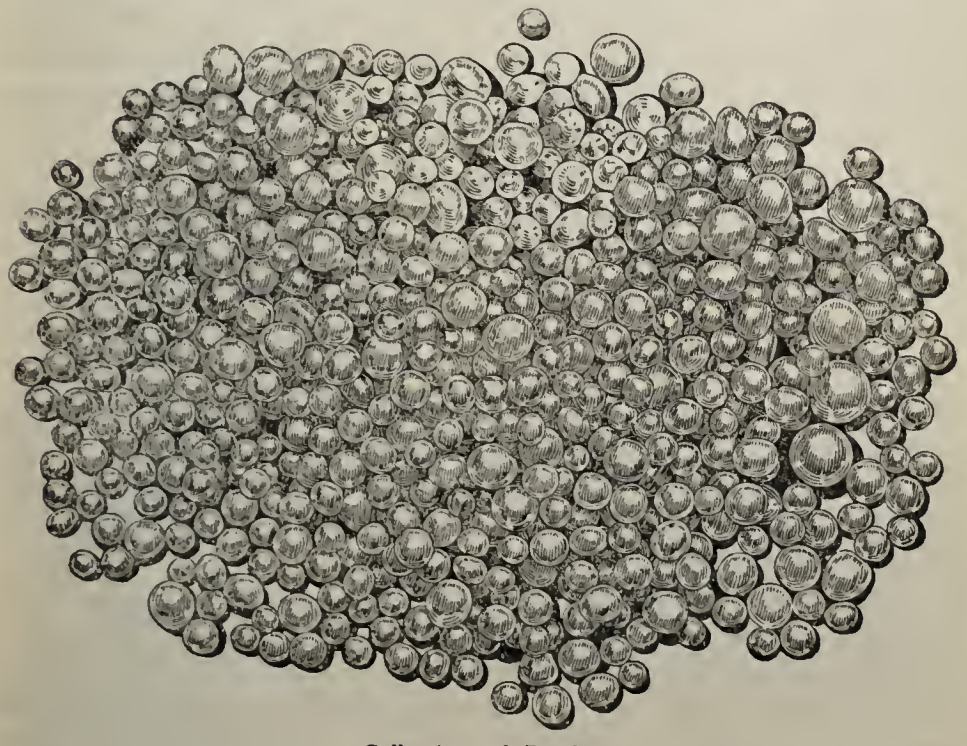
As far back as 1839 definite evidence of the appearance of the large variety of the mother-of-pearl oyster (known scientifically as *Meleagrina margaretifera*) in the coastal waters of the North-West was obtained, but it was not until many years later that this knowledge was turned to

A Pearling Fleet entering Creek.

practical account. In the very early days a considerable quantity of shell was obtained in, comparatively speaking, shallow waters, and before the advent of the diver, with his up-to-date diving appliances, native divers—aboriginals in some instances—were employed. In this way pearling was responsible, in a large measure, for the development of the Northern areas, the returns from naked diving, or beach-combing, helping many a settler through the early years of his pastoral enterprises.

The grounds comprising the North-West fishery extend from the vicinity of North-West Cape to the extreme Northernmost point of the State, a distance, as the crow flies, of nearly 1,000 miles. All portions of the ocean floor within this area do not produce the pearl-shell oyster, but at parts throughout good catches are being made. Pearling is essentially speculative. With good luck the investor may show handsome profits; with bad luck disaster may overtake him. The industry requires that capital be risked; it takes its toll of life even in its ordinary working, and in cyclones or "willy willys" many lives and much property have been lost.

In pre-war days the North-West pearling fleet consisted of more than 300 vessels—luggers and schooners—with a value, gear inclusive, of from £150,000 to £200,000. With the outbreak of war owners and employees joined the Australian Forces for service abroad (25 per cent. of Broome's

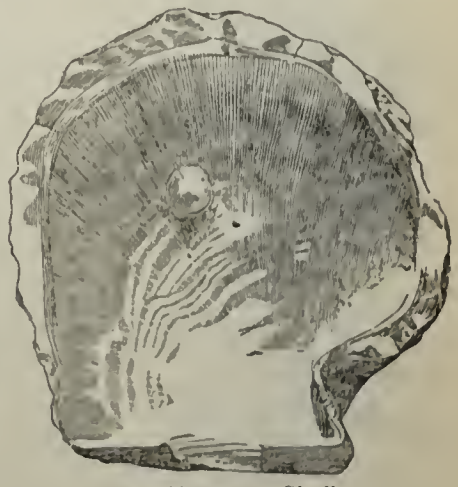


Collection of Pearls.

white male population was accepted), and pearling vessels were placed out of commission. At present little more than 100 pearling vessels are licensed and actively employed, but with greater stability in the pearl-shell market, and with prices for pearls more in keeping with those of earlier years, increased activity will take place. The output of the Broome fleet for the 12 months ended 31st December, 1927, was 735 tons, valued at about £128,825. The pearls obtained during the period 1st July, 1927, to 30th June, 1928, show a total value of £16,097.

In North-West pearling, February is looked upon as the beginning of the season. "Luggers" are usually equipped with about three months' provisions. At the end of that time they return to port, and are reprovisioned for a further voyage. Some fleets are provisioned from schooners which

visit the "grounds," and after supplying requirements, including water, convey the shell already fished to port. In this fishery all pearl-shell oysters are opened upon the decks of the luggers, or upon schooners acting as tenders to sections of the pearling fleet. Usually one employee, known as a "shell-opener," is in attendance, and upon him devolves the duty of opening the oysters, the collection of pearls, and the custody and safe delivery to the master-pearler of all pearls discovered.



Pearl Blister on Shell.

The pearling areas of the North-West are wonderfully well stocked with edible fishes, and crews are thus able to add to and vary their food supplies. Whilst the industry is financed and managed by Australians, the personnel of the fleets is almost wholly Asiatic, Japanese predominating. Malays, Manilamen, Koepangers, and Chinese are also employed, the respective figures during 1927 being 492, 129, 22, 205, and 57. Of recent years a more complete knowledge of the British Admiralty's methods of decompression has been conveyed to divers and divers' tenders and crews, with the result that "accidents" ("diver's paralysis"), even though a depth of up to 25 fathoms is sometimes reached, have become much less frequent, as has the number of fatal cases.

The Shark Bay fishery, which came into being in the early "fifties," is undertaken in that extensive area of the sea situated just north of the 27th parallel of latitude, and is conducted upon lines quite distinct from the sister industry further north. Here divers are not employed, as the habitat of the pearl-shell oyster—known scientifically as *M. imbricata*—is the shallow water of the "banks" or "bars," although it may be found also in water of about five or more fathoms. In the absence of divers, with their diving appliances, the boat used is usually of a distinct type and rig, evolved to suit the requirements of the work, viz.,

the towing of ordinary oyster dredges. "Banks" or "beds" where dredges are used are termed dredging grounds, but, in addition, there are parts known as "pick-up" banks. Over these at low tide the "pearl-fishers" wade and collect the oysters by hand. In this fishery the majority of employees are Europeans.

Although much smaller in size, and consequently of a much lesser weight than *M. margaretifera*, the Shark Bay oysters are of commercial value. Usually, they are exported to "Home" markets, for the manufacture of buttons. The annual take of shell from this fishery varies from about 100 tons to 250 tons, but larger quantities could be obtained. The value of the shell exported ranges from about £1,000 to £3,000. About 30 boats are regularly employed.

Coral.

Pearls from this fishery are not renowned for size, but very many beautiful small "stones" are secured annually. They are of wonderful lustre. Here are also found the majority of those beautiful straw-coloured pearls noticed in many cities. The annual production varies in value from £2,000 to £10,000.

XIV: GIANTS OF THE FOREST.

EPORTS of early explorers concerning immense forests of valuable hardwoods influenced the British Colonial authorities in their decision to establish a settlement at the mouth of the Swan River. The first building erected on the site of the City of Perth was a modest domicile for Governor Stirling and his staff, constructed from timber cut on the spot, and thatched with reeds from the river bank. On the 12th August, 1829, a ceremony described in old records as "laying the foundation stone of the Barracks," was carried out, in the presence of His Excellency the Governor, several officers, and a detachment of the 63rd Regiment of Light Infantry, "by cutting down a 'mahogany' tree."

The excellent qualities of "mahogany" were quickly appreciated, and a small shipment of this timber, which now has a world-wide reputation under the name of "jarrah," was the first commodity exported from the Colony, then scarcely twelve months old. The demand for timber as a building material led to the opening of yards for its reception and sale. One of the first of these was established by Mr. J. H. Monger in March, 1833, with the announcement that he had started a woodyard at Mt. Eliza "where an assortment of sawed timber will be kept for sale." In the following year, Messrs. J. & G. Hancock advertised that they had taken "Belmont, for the sole purpose of sawing timber," and were prepared to take live-stock or stores in exchange. Sheoak attracted early attention and was considered "likely to become an article of extensive export to the Cape, in view of its peculiar value for coopers' work."

Until 1844, the sawpit, manned by two workers, was the sole method of timber conversion, but in that year a sawmill "propelled by steam" was started in Guildford,

and, according to the daily Press, " was a complete success." The reporter, infected by the enthusiasm following the establishment of an industry on such a magnificent scale, described the mill chimney as " chaste and yet ornamental and in workmanship exquisite."

Fallers in Jarrah Forest.

Necessity quicklytaught the colonists that the useful products of the forest were not confined to structural timbers. With very limited and irregular shipping facilities, settlers were thrown upon their own resources. Leather, for example, became scarce, and in 1833 the first kangaroo skins were tanned and made into boots. The tanning agent used in the small industry which followed was principally the bark of the various wattles growing along the coastal plain. A representative show of exhibits was sent to London for the Great Exhibition in 1852, and the forest products displayed, according to a report by the Colony's agent in London, earned favourable comment. They included " gums and resins, dye woods (Xanthorrhoea), tanning materials, and the following timbers :—Banksia, cypress, jamwood, jarrah, morrell, red ebony, redgum, salmon gum, sandalwood, satinwood, sheoak, tuart, and York gum."

The first samples of timber sent to London appear to have come under the notice of the Admiralty authorities who placed an order for 200 tons of timber, "the growth of the Colony," in April, 1836. This order gave satisfaction, and a contract for a cargo of 400 tons for use in the Royal Naval Dockyards was secured in the following year. Records of the export of timber date back to 1836, and, since 1846, the trade has shown a steady increase.

About 1846, the native name of "jarrah" was generally adopted in preference to "mahogany." Old records show that this course was advocated on the grounds that "it is not mahogany and it should be introduced into England under its proper name, as a wood eminently serviceable for many purposes." Although such reasoning was sound, it is interesting to speculate as to the possible effect the retention of the name of "West Australian mahogany" might have had on the uses to which this timber was placed by overseas countries. The durable properties of the timber received such wide recognition that its suitableness for higher grade uses was overlooked for a period of nearly fifty years, and it is only recently that its value as a cabinet and joinery timber has been appreciated.

For more than a generation after the establishment of the first settlements, water transport was largely used for the carriage of goods, and boat building rapidly became an industry of some importance. The whole of the barges and boats used for passenger and goods conveyance between Fremantle, Perth, and Guildford were built of local timbers, principally jarrah, and, as early as 1834, vessels for whaling were being constructed in the Colony. The value of wandoo for treenails was quickly recognised, and considerable orders were executed to meet overseas demands.

The first mill of any considerable size was erected by Mr. Harry Yelverton at Quindalup, near Busselton, about 1854. The following description of the method of handling timber in this mill is of some interest in the light of present day milling conditions in the State :—

> The mill engine was stationary and of considerable horse-power, as it drove a vertical saw, two benches, and a flour mill. The building was of two storeys, the flour mill being on top. The

> saws used in the vertical were hook tooth, of the pit-saw type, and sometimes as many as six were placed in the frame at one time. To lift the logs from the truck to the cradle of the vertical, there was a long spar slung up the side of the building and used as a lever, the end being placed under the log. A small crab winch was used to pull down the lever and so place the log in position. The circular saw benches were not fitted with rollers, but a little crab winch was placed at the back of each bench and the flitch was drawn on to the saw by a rope from the winch.

It is recorded that, shortly after the erection of this mill, the Governor and the Under Secretary rode down from Perth (a distance of over 150 miles) to see it, and, on the auspicious occasion, " they shouted a cask of rum for the men, and the mill owner did the same." As this gift of rum represented 52 gallons, and the mill employed 47 men all told, it is extremely probable that the output of timber for that day at least showed some falling off.

By 1870 the export of timber from the State had risen to a value of £17,500, and six mills were operating. The growing timber industry was responsible for the importation of the first locomotive to run in the Colony, on a timber tramline constructed by the West Australian Timber Co. in the Sussex district, bringing logs to the company's mill at Lockeville, near Busselton.

In an endeavour to attract further capital for the exploitation of the forest resources of the South-West, a number of extensive concessions were granted during the seventies on a very easy rental basis. The largest of these, originally granted to the Rockingham Jarrah Timber Co., over 250,000 acres in the Jarrahdale district, will expire next year. In connection with the erection of the mill on this concession, it is amusing to read of the consternation of the blacks when the mill machinery was brought to the site from a landing on the Canning River, by a traction engine, that being the only feasible method of carting heavy loads. When the natives saw this engine puffing along with sparks flying out of the flue and steam out of the side, they ran away in a great fright, declaring that it must be " Jingey," meaning the devil.

Under the Land Act of 1898, the old concessions and licenses were superseded by a system of timber leases which were granted on a rent basis of £20 per square mile.

By the Land Act Amendment Act in 1904, the principle of charging royalty on logs was introduced under a permit system, and this continued in force until the passing of the Forests Act in 1918.

Any account of the early history of the timber trade in Western Australia would be incomplete without reference to Mr. M. C. Davies, the pioneer of the karri timber industry.

Cross-cutting Karri Log.

Mr. Davies was so successful in securing recognition on overseas markets for this valuable hardwood that a large and thriving settlement was established at Karridale, with its own railway lines and harbour works. Twenty years later, this colony within a colony was directly supporting 800 people. On the best of the karri forest, which was worked over by the Karridale and associated mills, an excellent crop of regrowth established itself, and steps have recently been taken by the Crown to acquire this country and bring the young forest under management, so that, by thinning and protection operations, a high

quality timber will be again milled from the area within a comparatively short period. Over some thousands of acres, this regrowth averages 3,000 cubic feet to the acre.

The following figures, which cover export only, and take no account of timber used in internal development, give some indication of the value of the timber industry to Western Australia :

Period.		Quantity.		Value.
1836 to 1927	....	274,000,000 cub. ft.	....	£25,500,000

Sandalwood and mallet bark stand out as two other products which have proved of great value in helping to pioneer the wheat lands and pastoral country of the southern interior. In 1845 the first shipment of four tons of sandalwood was consigned overseas, and although the trade has had a chequered career, its expansion has provided a livelihood for a hardy band of pioneers who have steadily penetrated into the little-known interior, well in advance of agricultural and even mining development. The first sandalwood came from the Eastern side of the Darling Ranges, and in 1847 a track, euphemistically referred to as the Sandalwood Road, was opened up from Bunbury in the direction of Williams. Fire, grazing, rabbits, and extensive clearing operations have resulted in the species being practically exterminated throughout the more settled parts of the State, but during the period from 1845 to 1927 393,000 tons, valued at £4,380,000, have been exported, principally to China.

Mallet is a name applied to a group of eucalypts which possess barks particularly rich in tannin. Overseas countries were quick to recognise the value of the product when brought under their notice by visiting botanists, and the trade, which started in 1903 with an export valued at £859, had by 1905 risen to an export value of £154,000. The mallet species occur throughout a comparatively limited habitat along the Great Southern Railway line, with Narrogin as the centre.

Owing to the absence of any control, wasteful exploitation proceeded so rapidly that within a decade of the first export the species were in danger of extinction. During recent months a careful examination of the waste lands

of the Crown in Great Southern districts has resulted in the location of many small areas of vigorous mallet regrowth where the seed has fallen on rocky hilltops and escaped damage by fire, to which mallet trees are very sensitive. It is hoped that these areas will prove the nucleus of new forests, and reforestation operations are now being started in several centres. The total value of mallet bark exported from 1903 to 1927 exceeded £1,111,000.

Brown Mallet—7 to 8 years.

For very many years after the value of the forests was realised, they were regarded as furnishing endless sources of supply. A move was made to review the position by the appointment of Mr. J. Ednie Brown as Inspector General of Forests in 1896. His death, within five years of his appointment, was a serious loss to the State, and for the following two decades the wasteful exploitation of forest wealth proceeded unchecked, and no attempt was made to reforest cut-out areas.

By 1903 it was apparent to public men with an interest in the future welfare of the State, that the forests were not inexhaustible, and a Royal Commission was appointed to enquire into the position. This Commission stated in its findings, that—

> In the interests of the State it would be a wise policy to discourage any increase in the rate of timber cutting till the consumption in scantling sizes is apace with the export of larger sizes. State acquiescence in the destruction of good timber only because the

> export trade demands it is a crime against coming generations, and any attempt to increase the export in the interests of foreign companies, or with the object of inducing more men to join in timber getting at the expense of posterity, needs wise resistance.

Apparently the Government of the day was not prepared to face the problem of restricting a growing primary industry in a country then largely dependent on gold mining, and the Commission, unassisted in their deliberations by any forester, failed to view the problem in its widest aspect. A better appreciation of the principles of forest economics might have led to a suggestion that the "crime against coming generations" was associated not only with the failure to restrict export, but with the negligence to provide proper conditions for the protection and regeneration of cut-over forests.

By 1910 conditions had changed; wheat and wool had supplanted gold mining as the principal industries of the State. Timber continued as the chief product of the wet South-West, but the big reserves of untouched forest were no longer to be had for the asking. In 1916 Mr. C. E. Lane-Poole was appointed Inspector General of Forests, and, with the passing of "The Forests Act, 1918," became the first Conservator of Forests, continuing in that position until 1921.

The two outstanding developments during this period were the passage of a modern Forests Act, which has rendered possible all subsequent progress in reforestation work, and a systematic classification of the forest lands of the State, which showed that early estimators had grossly over-stated their extent. The result of this classification may be summarised as follows :—

Prime Jarrah forest (*Eucalyptus marginata*)	2,330,000	acres
Prime Karri forest (*Eucalyptus diversicolor*)	125,000	,,
Prime Tuart forest (*Eucalyptus gomphocephala*)	5,289	,,
Prime Tingle forest (*Eucalyptus Jacksoni*) (*Eucalyptus Guilfoylei*)	8,662	,,

In comparison with the size of the State (624,588,800 acres) these areas are small, but they by no means indicate the total wooded lands. A very large proportion of the State originally carried Eucalypt forest which has proved of considerable value in the establishment of other

industries, notably as firewood and structural timber for mining purposes, and fencing material for pastoral and agricultural country.

The original timber classification did not extend to sandalwood and mallet areas. The artificial regeneration of sandalwood presents a number of unusual botanical and silvicultural problems. Early attempts at reforestation of this species were total failures, and it was not until after the publication of D.A. Herbert's work on the Root Parasitism of Western Australian Sandalwood that it was possible to trace this failure to the destruction of host plants in clearing the land prior to planting.

Sandalwood awaiting export.

Another local species of considerable botanical interest, the Christmas tree (*Nuytsia floribunda*) is also semi-parasitic. Such species, instead of developing an ordinary root system on their own account, send out long runner roots comparatively close to the surface, which, on coming in contact with the roots of other plants, attach themselves and draw the moisture and mineral salts necessary for plant growth from this source.

Recent investigations have shown that the sandalwood is not at all particular as to its host plant, and although the rather tough bark of the eucalypt roots seems to protect the main forest trees from attack, as many as eighty different species of widely separated genera, constituting the typical undergrowth of the low rainfall temperate forests and woodlands of the southern interior, have been shown to be satisfactory hosts.

In view of the value of land for wheat and grazing in the higher rainfall areas where sandalwood occurs, reforestation operations have been confined to developing the technique for the sowing and protection of this species in the Eastern Goldfields. Although a number of interesting and promising results have been secured in the large scale

Typical Forest of dry interior.

experiments extending over some thousands of acres, already sown, the work is still in the experimental stages. A careful examination of the sandalwood-bearing country in the Kalgoorlie district has indicated that natural regeneration is more frequent than was expected, and 205,000 acres, carrying a good stocking of host plants and a large number of growing sandalwood, have been gazetted as sandalwood reserves.

Reference has been made to the occurrence of numerous colonies of young growing mallet on rocky ridges in districts along the Great Southern. Considering the comparatively low rainfall of 20 inches, this species shows

remarkably vigorous and rapid growth in early life, and the extension of these colonies by the "spot" sowing of seed on adjoining country which is at present lying idle owing to its comparatively poor quality, and the presence of many poisonous shrubs, has given most promising results. Following an assessment extending over the habitat of the more available mallet species, 45,700 acres have been gazetted as mallet reserves, and five resident overseers have been appointed, whose first work will be the thinning and protection of the young regrowth. The bark yield from even the early thinnings has considerable value, and will practically pay for the cost of the operation.

Mallet Regrowth after first thinning.

Although the jarrah tree grows over an area of nearly 13 million acres in the South-West corner of the State, the area of really first-class forest is under 2½ million acres, and forms an almost continuous belt of country some 20 miles wide and 200 miles long, extending from Mundaring in the north to Manjimup in the south. Jarrah is a rough-barked eucalypt, developing under optimum conditions into a tree 150 feet in height with a girth of 16 feet and a clean bole of 60 feet. The virgin forest is usually open, having a ground cover of woody shrubs about one to two feet in height. When the canopy is broken and the vitality of the remaining trees affected by frequent fires, a thicker and taller under-storey develops.

The geological formation throughout the jarrah belt is granite, and the surface of the ground is practically covered with a ferruginous laterite either in the form of broken

capping or gravel. The rainfall varies from 35 to 45 inches, practically the whole of which falls during the winter months. Extensive areas of first-quality jarrah forest have been worked through subject to minimum girth restriction by sawmillers and hewers.

The natural regeneration which has developed on cut-over country has received no care or protection, with the result that a great deal of it represents faulty advance

Natural Pole stand of Jarrah before thinning.

growth. Jarrah coppices freely, particularly in early life. Careful observations have shown that small jarrah saplings, if cut back to ground level, may be expected to produce shoots which will develop more rapidly than seedling growth of the same age and grow into satisfactory mill logs. In consequence this advance growth represents a valuable asset which, following silvicultural treatment and reasonable protection from fire in the early stages, can be converted into a strong growing crop of young timber trees. In some districts the natural regeneration has reached the sapling stage, and, despite lack of treatment in the past, sufficient sound and vigorous saplings remain to provide a full stocking, and under these conditions the first silvicultural operation is a crown thinning.

During the past five years 51 resident overseers, engaged on operations associated with the natural regeneration of jarrah, have been established in homes in the forest, and to date 25,000 acres have been silviculturally treated. A number of additional overseers have recently been appointed to carry out the work of thinning and improving the valuable areas of natural regrowth which have already passed the sapling stage.

Jarrah Regrowth after first thinning.

The karri forest is restricted to the higher rainfall region in the extreme South-West, and is the only forest in the State which approaches the temperate rain forest type, in that the undergrowth and trees of the lower storey have softer foliage. The karri is a clean-barked eucalypt which towers to a height of 200 to 250 feet, with a girth of 120 to 200 inches, and although larger specimens are frequently found, it is questionable whether any trees over 300 feet in height exist to-day. The timber resembles jarrah in general appearance, but is stronger. It is not durable in the ground unless treated, and does not work to a satisfactory finish as readily as jarrah, but these characteristics do not affect its value for superstructural work, railway waggon building, etc.

The areas of pure forest are restricted to belts each a few thousand acres in extent, but karri occurs as the predominating species, mixed with marri and jarrah, over 250,000 acres in sufficient quantities to render sawmilling

payable even under present market conditions. The soil of the mixed karri and marri, and, to a less extent, the pure karri, has attracted considerable attention during recent years for intense culture, with the result that many areas cut out by big sawmills have been subdivided for settlement, but the work of dedicating pure karri country as State Forest is proceeding. The removal of the large trees and heavy loadage results in the destruction or damage of nearly all the immature trees which exist in the virgin forest, and in consequence regeneration operations approach more nearly to "clear felling" of the original crop, with the retention of odd groups of immature trees. Advance growth is practically non-existent in the karri country, and in consequence regeneration must be obtained from seed. Two resident overseers have been established in the karri forest, and several thousand acres have been treated for regeneration.

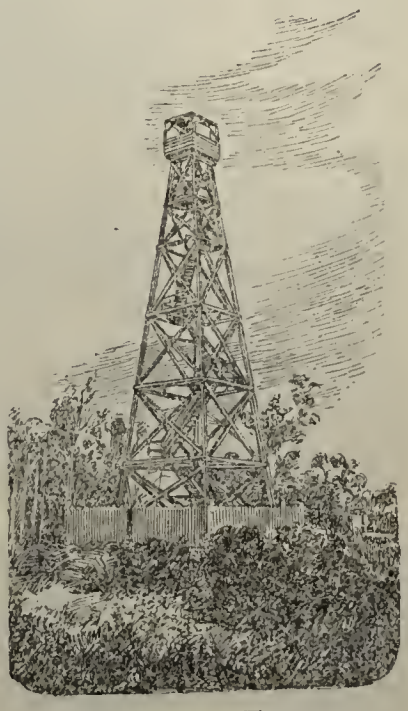
Karri Forest.

Among the other large timber trees of the South-West are tuart, which occurs along the coastal plain between Bunbury and Busselton but reaches its best development

A KARRI TREE NEAR NORNALUP.
Circumference, fifty-one feet at six feet from the ground.

in a comparatively small area between Capel and Wonnerup, and red tingle tingle, a tree approaching karri in size, which has a restricted habitat in the vicinity of Nornalup. Both are eucalypts, but while the timber of tuart is particularly hard and dense, having special value for the construction of railway rolling stock, the timber of red tingle tingle is of a reddish colour and one of the lightest eucalpyts found in Western Australia.

One of the greatest problems is the protection of the young crop from fire after establishment. Prior to 1920 the whole jarrah forest was burnt over by surface fires every three years. Only the great resistance of jarrah bark and timber to fire, and the power to coppice freely, have saved the species from extinction. Frequent bush fires were looked upon as inevitable and rather to be encouraged, in that a fire every two or three years was a lesser menace than a raging conflagration in a forest which had escaped burning for a long period.

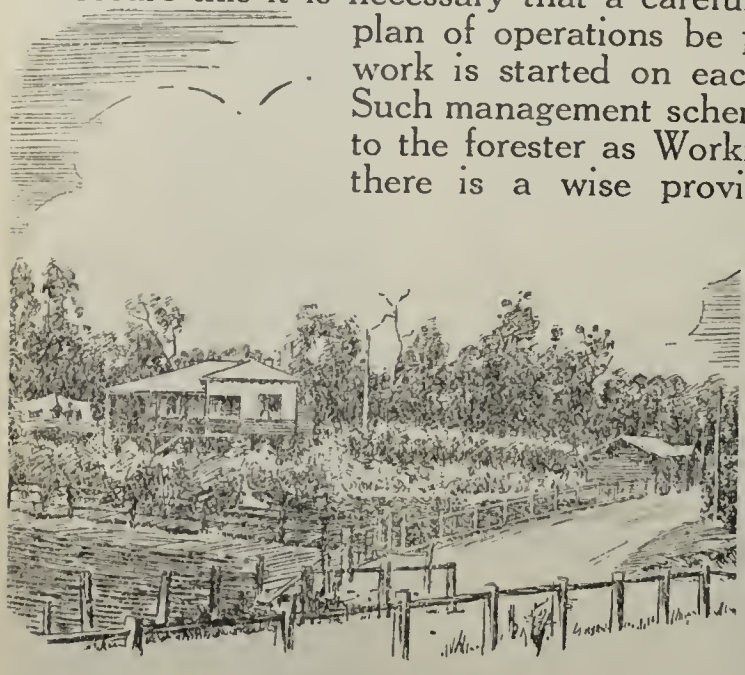


Fire Look-out Tower.

Large scale operations during the past five years have shown that, with proper organisation, fire protection is economically possible in jarrah forest. Permanent lookouts are necessary during the five dry summer months, so that outbreaks of fire may be detected early. Rapid communication by telephone or heliograph between look-out and workmen engaged in the forest on effective work is essential, and finally it is necessary that the workmen themselves shall have some training in fire-fighting methods. At the same time it is realised that for many years controlled burning will play a large part in forest protection, as well as in silvicultural practice, and that very often in dealing with hardwood forests it will prove safer and more

economical to run a slow controlled fire through a sapling or pole forest, than risk a serious fire at the height of summer.

In dealing with a crop of trees which take many years to come to maturity, continuity of management is essential. To secure this it is necessary that a carefully thought-out plan of operations be prepared when work is started on each forest area. Such management schemes are known to the forester as Working Plans, and there is a wise provision in "The Forests Act, 1918," which directs that all Working Plans shall be submitted to the Governor in Council, and when approval is given, the provisions of the Working Plan have the same effect as regulations in controlling quantity of forest products to be extracted, and the silvicultural operations which are to be carried out on the Working Plan Area each year.



District Headquarters.

During the past seven years Western Australia has made much more progress in organised forest management than any other State in the Commonwealth, and over 700,000 acres have been brought under detailed Working Plan control. A great deal of the country dealt with in these Working Plans has been heavily cut over in the past, and the primary object of the Plan is to provide for a new crop. Big advances have been made since the passing of "The Forests Act, 1918," but forestry cannot be regarded as having been placed on a sound basis until the total volume of timber extracted each year no longer exceeds the estimated increment of the growing trees.

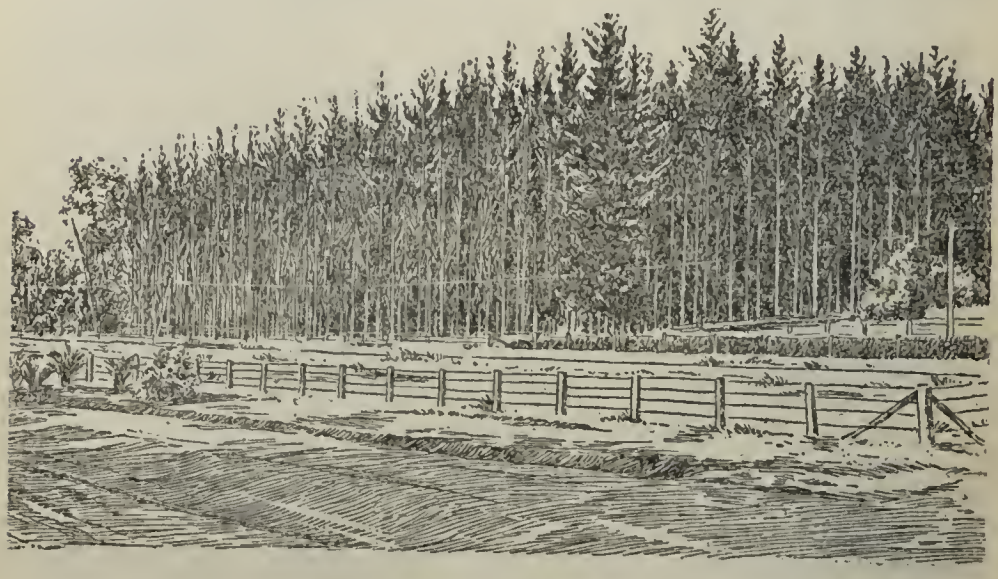
Careful calculations, based on the detailed assessment of all timber country carrying merchantable forest which remains in the possession of the Crown, have indicated that considerable reduction in output, both from the jarrah and karri forests, is necessary if the timber industry is to be placed on a permanent basis. To bring this about will involve reorganisation of the trade, but many benefits will result from regulated output, more than compensating for reduction in total volume of cutting. General Working Plans, aiming at a sustained yield of both jarrah and karri, have been prepared and are at present receiving the consideration of the Government.

Pine Nursery, Hamel.

In the absence of indigenous softwood forests the people of Western Australia have learnt to use hardwood for many purposes for which soft timbers are considered necessary in other countries. Despite this fact, the value of softwoods imported annually amounts to over £150,000, and in order that the country may avoid the necessity of buying from overseas primary

Overseer's Cottage—Jarrah Working Circle.

products which can be grown on land of little value for other purposes, it is aimed to plant 1,000 acres of pines per annum. Considerable experimental work has been carried out, largely arising from problems associated with our low summer rainfall, and between 20 and 30 species of pines from different parts of the world are being tried out



Pine Plantation, Hamel—16 years.

under varying local conditions. The two pines, *P. insignis* and *P. pinaster*, which have proved their value in other parts of Australia for large scale plantation work, are being used pending the results from test plots of other species; 3,400 acres of effective plantation have been established to date. The initial work in connection with the establishment of nurseries, etc., is now nearing completion, and the full programme of at least 1,000 acres per annum will be maintained in the future.

The wide-spread activities of the Forests Department include branches engaged in such work as mapping of forest areas, inspection of timber, research into problems of forest products, a seed store for the collection, distribution, and sale of indigenous seed and the handling and testing of Departmental seed requirements, and a nursery for the supply of shelter and shade trees to farmers and public bodies.

Notwithstanding the rapid expansion of the work of the Department, the balance of revenue over expenditure was in 1928 more than three times greater than in 1920. The next decade will be a critical one in the history of Western Australian forests. The framework of an organisation necessary for the establishment of forestry as a permanent rural industry is set up, but a great deal remains to be done, and sacrifices in immediate gain for future welfare must be faced.

Pine Plantation, Mundaring—6 years.

It may be considered the function of the Government to care for our future timber supplies, but it is for the citizens of the State to realise the direct and indirect value of trees and wood-lots in regions outside the main timber country. Shade for man and beast in summer, and shelter from cold winds in winter, are often lacking in our more progressive country districts, where the axe and fire stick have done their work too thoroughly. In a hundred years we have sacrificed forests which Nature has built up through the centuries, and one of the lessons waiting to be learned from older civilisations of Europe and Asia is the wisdom of maintaining crops of trees side by side with fields of wheat.

XV: MINERAL RESOURCES.

OLD once threatened calamity to Western Australia. In 1851 reports of the gold discoveries in Victoria spread like wildfire through a community still faced with acute pioneering difficulties, and discouraged by the administrative errors of a distant Government. To prevent a general exodus a law was passed prohibiting any person from leaving the Colony without giving notice to the Colonial Secretary, and regulations were promulgated in order to delay or dissuade departures. Prospecting parties were sent out in the hope of finding gold nearer at hand, but without success. A few hundred people took passage to Victoria. The ten years that saw Australia's population trebled—shooting up beyond the million mark—saw little progress here, and for more than another twenty years the Colony moved slowly.

Typical Miner's Camp.

Then came the first important gold find. In 1882 Michael Durack had found colors of gold in the vicinity of Hall's Creek. Surveyor Hardman, of the Kimberley Survey expedition, passing through the Ord river country in 1884, investigated the reports that fine alluvial gold had been found along the river. He tested the gravel beds of the Ord, the Elvira, and the Panton, and reported favourable indications over a distance of about 150 miles. About the same time Mr. Carr-Boyd sent gold-bearing

samples of stone from the district to Melbourne for assay. At the end of August, 1885, a party left Yeeda Station—some 20 miles east of Derby—and, travelling in a generally easterly direction about 400 miles, prospected the Margaret, Ord, and Panton rivers. They found many promising indications, but after collecting about ten ounces of gold had to return to Derby for supplies. Several members of the party were experienced miners, and their reports, with others, attracted prospectors from the eastern colonies. In 1886 the first gold rush to Western Australia set in.

The Kimberley goldfield was proclaimed in May of that year, and four months later the port of Wyndham, at the head of Cambridge Gulf, was opened as being more convenient to the fields than Derby. Even to-day the track —whether from Wyndham or Derby—to Hall's Creek is a difficult one, traversed largely by donkey teams covering not more than seven miles a day. In the dry winter months almost innumerable river beds of heavy sand—varying in width from a few yards to nearly a quarter of a mile, and frequently with almost precipitous banks—have to be negotiated. In the summer, when the rain falls, these rivers are raging torrents—quite impassable—whilst flies and mosquitoes in myriads add acute discomfort to the travellers' hardships. The redeeming feature of the journey in the dry season is that an abundance of water is always available at easy stages, but notwithstanding this, the long trek from the coast to Mount Pandora forms one of the epics of gold-seeking. Many perished by the way, and those who won through secured but inadequate reward. Few made more than a bare living ; many lost all they had brought with them.

By the end of 1886 there were nearly two thousand men on the field, and the gold entered for export for the year was a beggarly 302 ounces. Probably a good deal more was smuggled out. The Legislative Council—to keep for the Colony the wealth won within its borders—imposed an export duty of 2s. 6d. per ounce (repealed the following year) and the miners resented and, as far as they could, evaded it. Mr. C. D. Price, the first Warden, on his arrival at the end of the year, found the infant goldfield already on the decline and men drifting away. Reef mining at

Hall's Creek gave promising results at the outset, but the values did not go down. For 1887 the output was nearly 5,000 ounces (including alluvial), but after that year production decreased.

Disastrous to those who took part in it, the first gold rush was of inestimable value to the Colony. It brought Western Australia recognition as a gold-producing country, and the men it attracted were not of the type to be discouraged by misfortune. It led also to the enactment of mining legislation, including provision for the issue of miners' rights at a charge of £1 per annum, and of gold mining leases with a currency of twenty-one years at a rental of 20s. per acre per annum. Reward not exceeding £1,000 was offered to the discoverer of a new and payable goldfield.

Dry-blowing at Fly Flat, Coolgardie.

As far back as 1854 Surveyor Austin, passing through the Murchison country, formed the opinion that Mt. Magnet was likely to become the centre of a great goldfield: "one of the richest in the world" was his expression. The disappointed men from the Kimberleys came south and, with others, carried on the search over a wide area. Accidental discoveries added encouragement. In 1887 Charles Glass found a speck of gold whilst sinking a well on his property east of Newcastle. It was only a speck, but it helped to stimulate prospecting. B. N. Colreavy, H. Anstey, Seabrook, von Bibra, W. J. Parker, Riseley, and others examined 200 miles of country between the agricultural district and the Yilgarn Hills, and Southern Cross was proclaimed a goldfield at the beginning of October, 1888.

In the same year young Withnell—looking for horses some seventy miles east of Roebourne—detected a speck

of gold in a stone he had picked up to throw at a bird. He brought the stone in to Roebourne, and Colonel Angelo (the Government Resident), in his haste to convey the good news to headquarters, sent the cryptic telegram to Surveyor General Forrest: "Withnell, looking for horses, picked up a stone to throw at a crow, signed, Angelo." And the reply came: "What happened to the crow? signed, Forrest." The Pilbara goldfield was proclaimed in 1889.

Bayley Street, Coolgardie, 1893.

The stage was set for big things, and the big things came with the granting of Responsible Government in 1890. To the astonished Parliament of 1891 a Loan Bill was presented for £1,336,000, chiefly to provide facilities of transport for the Colony's industries. The confidence of the Government inspired confidence in other people. Whilst the construction of the railway from Northam to Southern Cross was in hand, Arthur Bayley and John Ford discovered Coolgardie in 1892 and Patrick Hannan found Kalgoorlie in the following year. All eyes were drawn to Western Australia: the days of its stagnation were at an end. In eight years the population increased from 58,658 to 179,708.

Bayley Street, Coolgardie, 1896.

The railway was opened to Coolgardie in March, 1896, pushed on to Kalgoorlie the same year, and to Menzies a couple of years later. With equal celerity transport facilities were provided for the Murchison fields. In 1896 the great Coolgardie water scheme was launched, and in the providing of schools and hospitals, post offices and telegraph lines, and all the public needs of infant and scattered communities the Forrest Government showed its readiness to pledge the entire credit of the Colony on the development of its mineral resources. Banking and other private institutions followed suit. It must be confessed that not always was adequate allowance made for the difficulties of meeting the needs of phenomenal expansion, and at times there were well-founded grievances, as when the pioneers of the North Coolgardie goldfield complained that the letter delivery of the district was entrusted to an Afghan and a camel, "neither of whom can read English."

First Train to Coolgardie, March, 1896.

For statistical and local administrative purposes the State has been divided into nineteen goldfields. In production of the precious metal East Coolgardie far exceeds all the others combined, and in 1928 was responsible for more than three-fourths of the total yield. The Golden Mile—one of the richest deposits of its size in the known world—created, and for more than a third of a century has maintained, the two fine inland cities of Kalgoorlie and Boulder, whilst contributing immeasurably to the general development and prosperity of the State. It still supports a large—though decreased—mining population, and promises to enjoy a much longer life than is usually allotted to an Australian goldfield.

Some of the once flourishing districts have latterly become unimportant, as indicated by a return showing the yield for 1928 and the total output of each field from the date of its proclamation until the end of last year :—

Goldfield.	Date of Proclamation.	Output, 1928.	Total Output to end of 1928.
		Fine ozs.	Fine ozs.
Kimberley	May, 1886	40.38	29,672.32
Pilbara	1888	1,865.76	305,917.59
West Pilbara	1895	.38	30,947.93
Ashburton	1890	36.30	6,335.00
Gascoyne	1897	47.42	1,096.02
Peak Hill	1897	1,261.91	217,524.87
East Murchison	1895	4,447.18	1,653,245.74
Murchison	1891	21,719.20	3,500,582.49
Yalgoo	1895	5,755.08	112,462.45
Mt. Margaret	1897	33,018.05	3,340,226.75
North Coolgardie	1895	3,293.51	1,981,307.58
Broad Arrow	1896	821.22	338,517.77
North - East Coolgardie	1896	796.03	673,909.34
East Coolgardie (Kalgoorlie-Boulder)	1894	306,281.82	21,772,849.71
Coolgardie	1894	3,633.47	1,521,365.84
Yilgarn	1888	4,953.49	1,180,574.96
Dundas	1893	5,028.04	724,485.88
Phillips River	1900	189.50	81,992.36
Donnybrook	1899	....	839.74
Unallotted	....	219.75	36,416.55
	Total	393,408.49	37,510,270.89

From a modest beginning, with an output of £1,148 worth of gold in 1886, the production of the precious metal had reached by the end of 1928, 37,510,270 ounces, worth a hundred and sixty millions sterling. This is the recorded output and it is known that much of the gold mined—particularly in the early days—was never reported to the Government. The total amount of dividends paid by gold mining companies has been twenty-nine millions sterling.

The peak year of production was 1903, when the recovery was 2,064,801 fine ounces valued at £8,770,719, and seven years later the value was as high as £6,246,848.

Since then, with the single exception of the year 1913, the trend has been downward. Last year's yield was 393,405 ounces, valued at £1,671,088, representing more than 86 per cent. of the total gold production of the Commonwealth for the year.

Great Boulder and Golden Mile, 1894.

The drop in production is accounted for by the fact that in the early days of discovery the country was quickly prospected and new mines were opened up in great numbers almost simultaneously. The harvest was there waiting to be taken, and the rich accumulations of the ages were recovered in the

The Golden Mile, 1929.

space of a comparatively few years. Then as the easily won stores of rich surface deposits became worked out, ores carrying lower values had to be mined and milled, while

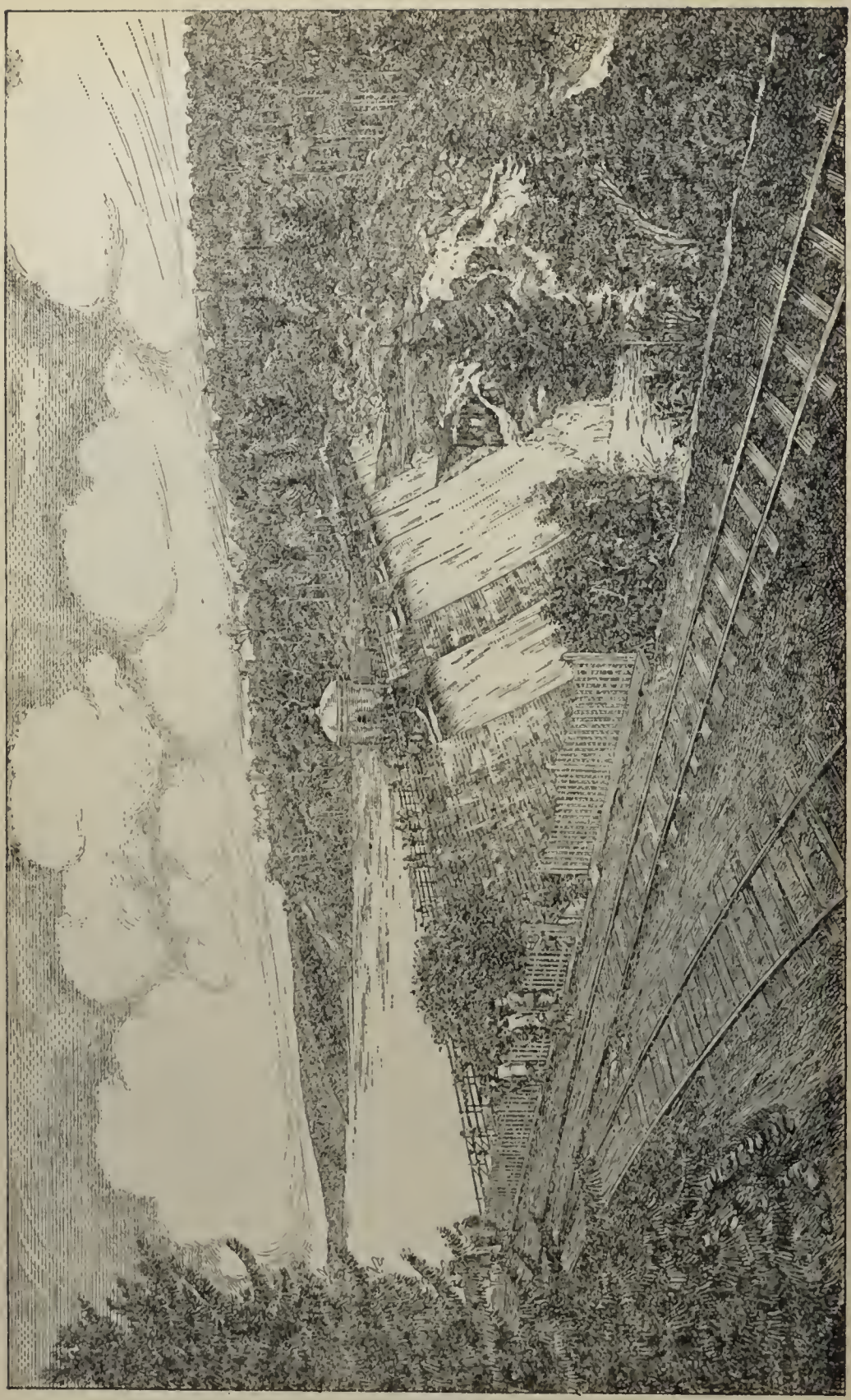
costlier operations had to be undertaken at ever-increasing depths. Whether the turning point is nigh remains to be seen, but there are indications of a substantial industry being maintained.

The most extensive field of immediate promise in the outer districts is at Wiluna, 200 miles north of Leonora and 120 miles east of Meekatharra, where operations on a large scale have been carried on during the past three years in order to prove the extent and value of the ore-bodies. Wiluna is now being linked up with the main railway system, and it is anticipated that the town will shortly comprise a population of several thousand inhabitants.

Hannan Street, Kalgoorlie, 1895.

The Perth Branch of the Royal Mint may be said to have been established in 1894, in which year the Government took the initial steps towards bringing the institution into being. The Mint was opened in a large and ornate block situated in Hay Street east, five years later, since when it has dealt with over twenty-six and a half million fine ounces of gold.

The Legislature has ever been mindful of the value of the industry to the State. The laws governing it have been described by a United States Commissioner as "wonderfully systematic, carefully balanced and reasonable." The Government, by acts of administration, has endeavoured to tide the industry over the present difficult period. The water charges to the Kalgoorlie mines have been lowered, while acceptable remissions of railway freights have been granted. An expert of wide experience from the Rand was secured to inquire thoroughly into the



MUNDARING WEIR,

The Source of Supply for the Goldfields Water Scheme.

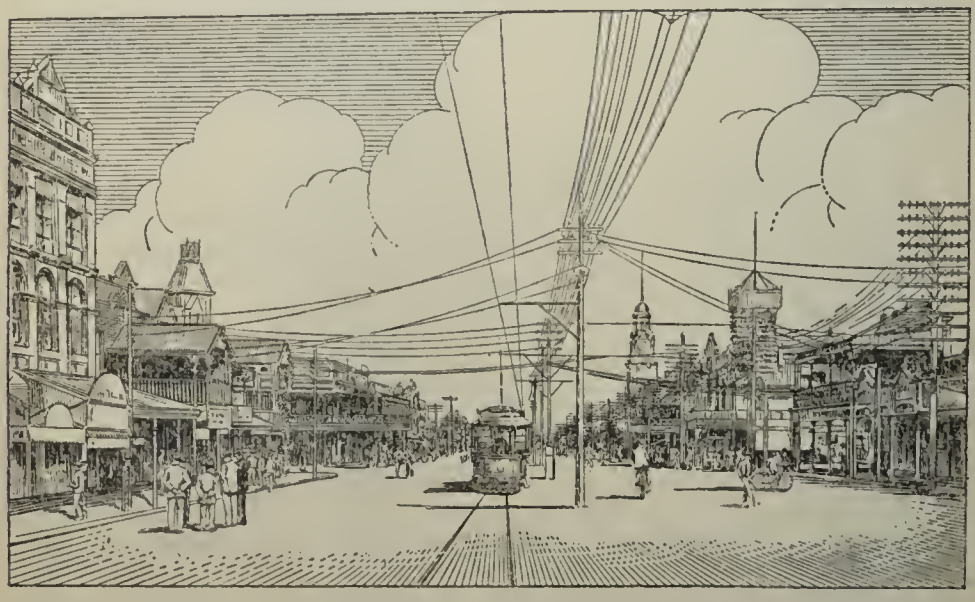
This beneficent undertaking was conceived by Sir John Forrest and designed and executed by Mr. C. Y. O'Connor. Sanctioned by Parliament in 1896, it was completed in January, 1903. The reservoir, situated in the Darling Ranges about twenty miles east of Perth, has a catchment area of 596 square miles, is 760 acres in extent, and has a capacity of 4,600,000,000 gallons. The height of the weir wall above the river bed is 100ft., length 755ft., thickness at the bottom 85ft. and at the crest 11ft. The reservoir extends back a distance of seven miles, and is in the midst of a State forest.

By means of eight pumping stations the water is forced to Kalgoorlie, a distance of 351 miles, through pipes three feet in diameter, the maximum delivery capacity being five million gallons per day. The water takes approximately four weeks to reach Kalgoorlie.

Undertaken primarily for the supply of water to the Coolgardie and Kalgoorlie goldfields the scheme has been widely extended through the agricultural areas north and south of the main pipe line and has played an important part in their development. There are now 1,499 miles of main and subsidiary pipes, of which 918 miles are for the supply of agricultural districts and towns. The present daily consumption is 1,750,000 gallons on the goldfields and 2,000,000 gallons in the agricultural areas. The scheme also serves the eastern portion of the metropolitan area.

The capital cost to date has been £3,677,000. For the original undertaking a loan of £2,500,000 was raised in London, a sinking fund of three per cent. per annum being provided for its redemption. When the loan fell due in January, 1927, it was discharged in full, and a substantial surplus remained from the annual contributions.

industry and recommend how it could best be revived. The report was decidedly optimistic and helpful. In 1927 the Government decided for a period of 12 months to reimburse all the mines to the extent of the amount paid for insurance premiums in connection with the third schedule of the Workers' Compensation Act, which makes it obligatory for every employer to insure against liability to pay compensation to employees on account of incapacity arising from an industrial disease. This assistance has now been extended for an additional twelve months. The amount for the first twelve months paid out by the Government totalled £29,284 3s. 4d.



Hannan Street, Kalgoorlie, 1929.

The State battery system has been operated in Western Australia on a scale unequalled in the world. It appeals chiefly to prospectors who are endeavouring to develop mines by their own efforts. When a promising district is lacking in facilities for the treatment of ore raised by prospectors a State treatment plant is provided after water has been located. The prospectors' sands and slimes are purchased by the Government on assay values, but the ore is treated at such low prices that the system has never been worked at a profit. From its inception to the end of September, 1928, the State batteries have cost £1,531,694

and have crushed 1,550,292 tons of ore for a value of £6,169,343. This includes 80,935 tons of tin ore which realised £93,572 10s.

One of the greatest difficulties which the mining industry in Western Australia has to contend with is the lack of water supplies. The wonderful engineering feat of supplying the eastern goldfields with water from the Darling Ranges through the agency of the Goldfields pipe line was successfully undertaken and has solved the question for that particular portion of the State. Farther afield boring and well sinking operations have been and are continually being proceeded with in order that permanent supplies may be located. The State maintains a Goldfields Water Supply Department whose function is to undertake all the necessary duties relating to water supply, conservation and maintenance.

Almost every mineral known to science is found somewhere in Western Australia, while those most sought commercially are available in large quantities. Gold is the great magnet, but once gold supplies become harder to obtain, prospectors turn their attention to commercial minerals, and every year brings forth new discoveries of minerals previously unknown in the State.

The first record of the discovery of coal is that on the Irwin River in 1846, but of far greater importance was that of the Collie field in 1883. Since then there have been numerous discoveries of other coal seams, mostly of inferior quality. The coalfields are all located in the southwest coastal district extending from Geraldton on the west coast to Albany on the south coast. The only producing field at present is Collie, where many workable seams are known to exist, the total thickness of clean coal known being 140 feet. The collieries now operating can supply considerably more than the present demand. Potential producers are the Wilga Companies, now engaged investigating the coal recently discovered fifteen miles south of Collie.

The principal consumer of coal supplied from the Collie district is the Western Australian Government Railways, which draws from it practically the whole of its requirements

of screened coal. The second largest local consumer is the Government Electric Power Station at Perth, which uses the smalls resulting from the screening of railway coal. As a result of investigations on the Collie Coalfield, the estimate of the coal available to a depth not exceeding 2,000 feet is 3,500,000,000 tons. The amount of coal available on the more recently discovered field has not yet been estimated, but will considerably increase the fuel resources of the State. The annual output from Collie is about 500,000 tons.

Tin ore was first discovered at Greenbushes in 1888, and since then it has been found at a number of places in the Western half of the State from West Kimberley in the north to near Cape Leeuwin in the south. The Pilbara Goldfield and Greenbushes district are the only fields that have produced any considerable quantities.

Copper is mined in the West Pilbara, Northampton, and Phillips River fields. It is interesting to record that the history of mining in Western Australia began with the discovery of the Waneranooka Copper Lode at Northampton in the year 1842, and in 1845 the first consignment of copper ore left the State to be smelted in Wales.

Prospecting Party leaving Coolgardie.

Lead ore was another mineral discovered in the early years of the State's history, being found in 1848 on the lower Murchison River at what is now known as the Geraldine Mine. It has since been located in various portions of the State, the most important discoveries being those at Galena, Northampton, and Protheroe.

Deposits of iron ore are plentiful in Western Australia, many of them containing many millions of tons of ore

readily obtained by quarrying and open-cut mining within convenient reach of transport. The most noteworthy are those at Yampi Sound, in the Kimberley Division, rising in cliffs from deep water to a height of several hundred feet, and estimated to contain 97 million tons of high grade ore above high-water mark. Yampi Sound is a spacious and almost land-locked deep water harbour; the largest vessel afloat could enter and leave it at any state of the tide and could be loaded directly from the quarries at a very low cost.

A large deposit of a similar nature exists at Tallering Peak, 30 miles from the main Murchison railway at Mullewa, thence 41 miles to the port of Geraldton. Other large deposits are located at Wilgie Mia and Mt. Hale near Cue, Koolyanobbing near Southern Cross, and Clackline within 50 miles of Perth.

Deposits of manganese ore of considerable size and possible economic importance have been found in several parts of the State. The largest yet known are those at Horseshoe in the Peak Hill Goldfield and those near the Hamersley and Fitzgerald Rivers, and in the Ravensthorpe Range close to the south coast. The Horseshoe Range deposits consist of two ore bodies estimated to contain not less than $1\frac{1}{2}$ million tons of good marketable manganese in the superficial crusts. Horseshoe is now linked up with the main railway system, and the mine is in the hands of a capable company which should be producing large quantities of ore in the near future.

Coaching Days, early Coolgardie.

No oil in commercial quantities has yet been found in this State, but boring operations have been carried on in

several districts during the past seven years, and a promising discovery has been made by the Freney Kimberley Oil Company on its area in the Kimberleys. The company's oil bore at Poole Range was continued to a depth of 2,131 feet, and analyses of samples taken from the bore proved the presence of a true mineral oil of commercial use. The bore has now been closed down until an expert driller and oil technologist arrives to supervise future operations. The occurrence is of tremendous importance, and in the words of the Commonwealth Geological Adviser, Dr. Woolnough, "the geological structures are suitable and the prospect of finding oil distinctly good."

Other minerals found in Western Australia include asbestos, pyritic ore, tantalite, of which quite a good production is now being reported, antimony, bismuth, gadolinite, graphite, gypsum, magnesite, mica, molybdenite, scheelite, wolfram, and zinc.

Gem stones found in Western Australia are diamond, emerald, topaz, and sapphire. Poona, in the Murchison Goldfield, is at present being thoroughly prospected in connection with emeralds, and several companies are interested in the deposits.

The principal stones used in the State for dressed masonry are granite, limestone, and sandstone, of all of which many excellent varieties are available. Granite quarries close to Perth, at Boya and Mahogany Creek, yield a fine-grained grey stone which is widely used for buildings, for example the General Post Office, as well as for breakwater blocks and pavements. A similar granite from Meckering and a coarser rock from Kellerberrin have been used in Perth and in the country. Other beautiful types of granite, red and grey, have been quarried at Albany and Roelands.

After the Darling Range granite the most important stone is the Donnybrook sandstone, a fine-grained rock weathering white, cream, or light brown. It has been extensively used in Perth of recent years, notably in the construction of the General Post Office and the Australian Mutual Provident Society's building. Builders' lime is also manufactured from the "capstone" overlying the

coastal limestone at Fremantle. Plaster of Paris, which used to be all imported, is now made locally from gypsum raised within the State at Dongara, Lake Seabrook, Cowcowing, Nevoria, Dukin, Koorda, Lake Grace, Hines Hill, and elsewhere.

Western Australia is fortunate in the possession of deposits of all the minerals necessary to build up a big ceramic industry, including clays of infinite variety, felspars, quartz, and other flint substitutes. The chief types of clay which have already been opened up may be roughly grouped as (1) fire-clay, (2) china clay, (3) semi-ball clay, (4) ball clay, (5) stoneware clay, (6) brick and terra-cotta clay, (7) soft slate, (8) fuller's earth.

The manufacture of house brick was the earliest ceramic industry established in the State, and has flourished ever since, brick being the principal building material used in all the towns. Roofing tiles were made on a small scale many years ago, but the industry has only of recent years been re-established on a firm basis, and several makers are now able to compete successfully against imported galvanised iron and French tiles. Large quantities of vitrified drain pipes and sanitary fittings are made from a similar mixture to that used for tiles.

Condenser Plant.

A pottery industry has also been established, the majority of the clay, which is all locally obtained, being brought from Goomalling. The manufactured china is of a high class.

The coastal plain for 50 miles north and 150 miles south of the metropolis consists of sand dunes which, with the exception of a narrow strip along the coast where it is highly calcareous, is quite suitable for the production of

bottle glass. Large masses of higher grade sands most suitable for use in the production of high grade tableware and other white ware are distributed in the vicinity of peaty swamps over the same area. The chief of these deposits is at Lake Gnangara (Wanneroo).

Red and yellow ochre, sienna, umber, galena, barite, jarosite, and kaolin, all required by the paint manufacturer, are widely distributed throughout the State and have been known and utilised for many years.

Other minerals, such as chalk, mineral phosphates, and potash, serve to increase the wonderful array of wealth which it is possible to win from the Golden West.

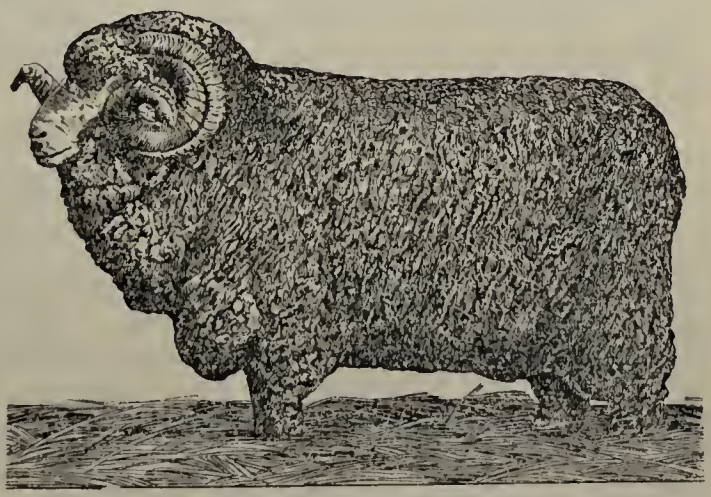
SUMMARY OF MINERAL PRODUCTION.

Description of Mineral.			1928.		Total to end of 1928.	
			Quantity.	Value.	Quantity.	Value.
				£		£
1. Antimony ..	(Exported)	statute tons	..	..	93	1,828
2. Arsenical Ore ..	do.	do.	*	401	*	13,425
3. Asbestos	(Reported)	do.	12	782	1,036	43,357
4. Bismuth	(Exported)	do.	..	..	11	844
5. Coal	(Reported)	do.	528,420	420,145	8,763,722	5,780,848
6. Copper { Ore ..	(Exported)	do.	100	765	80,226	987,885
6. Copper { Ingot and Matte ..	do.	do.	..	..	13,415	818,063
7. Emeralds	(Reported)	carats	..	..	200	421
8. Gadolinite ..	do.	statute tons	..	..	1	112
9. Gold	(Exported and Minted)	fine ounces	393,408	1,671,093	37,510,271	159,333,503
10. Graphite	(Exported)	statute tons	..	..	*	696
11. Gypsum	(Reported)	do.	4,214	5,425	22,831	30,895
12. Ironstone	do.	do.	..	..	57,830	36,695
13. Lead (Ore and Concentrates)	(Exported)	do.	..	..	44,032	508,748
14. Lead and Silver Lead (Ore and Concentrates)	do.	do.	248	4,198	26,743	486,563
15. Lead (Pig) ..	do.	do.		..	23,052	628,956
16. Limestone	(Reported)	do.	..	..	93,706	18,290
17. Magnesite	(Exported)	do.	..	..	806	1,526
18. Manganese ..	do.	do.		..	172	1,318
19. Mica	do.	do.		..	*	10,221
20. Molybdenite ..	do.	do.	..	..	78	865
21. Pyritic Ore ..	(Reported)	do.	..	..	74,048	45,496
22. Silver	(Exported)	fine ounces	55,554	6,638	4,577,482	632,675
23. Tantalite	do.	statute tons	11	2,749	*	32,036
24. Tin Ore	do.	do.	85	15,002	15,989	1,576,234
25. Tungsten Ore { Scheelite ..	do.	do.	..	..	21	2,507
25. Tungsten Ore { Wolfram	do.	do.	..	..	15	1,441
26. Zinc	do.	do.	..	..	184	5,437
Unenumerated			..	..	..	7,456
Total Values			..	2,127,199	..	171,008,341

*Weight not stated.

XVI: THE GOLDEN FLEECE.

SHEEP to the number of 1,096 were brought to the Swan River settlement during 1829; to-day the sheep in the State number eight and a half millions, spread over many hundreds of thousands of square miles of country, and the possibilities of further expansion are enormous. The increase in the flocks will be contributed to in three directions: by the opening up of localities the suitableness of which for wool cultivation has but recently been established; by the stocking of hitherto neglected areas in the more settled districts; and by the increase in the carrying capacity of the lands, resulting from the laying down of pastures and the use of superphosphates. This last may well prove the most important—and the most profitable—development of the three. Continued improvement in the quality of the stock will also increase the average weight of the fleece. The diversified character of the industry is indicated by the fact that in parts of the State it requires twenty acres of land for one sheep, and in parts four sheep can be carried to each acre; probably more.



West Australian bred Merino Ram.

The earliest settlers realised the value of the natural pastures—pastures that carried sheep through the long, dry summer. They appreciated, too, the relief from winter conditions in the home land. Some of the sheep were brought from England—the 1829

shipment including 157 imported by William Wise, 147 by James Henty, and 124 by Colonel Latour. Others came from New South Wales. Thirty-five years before the settlement was established, Indian sheep had been brought to Sydney from Calcutta, and during the last decade of the eighteenth century Spanish merinos were imported and crossed with these. Many of the progeny formed part of the early West Australian flocks. One of the most successful of the pioneer breeders was Mr. Spencer Trimmer, who in 1832, from a flock of 500 sheep, depasturing east of the Darling Ranges, sent a small parcel of wool to London which—though dirty and badly packed—realised 2s. 2d. per lb. In 1833 Sir Richard Spencer—Government Resident at Albany—brought out with him some highly bred sheep, including merinos from the flock of Lord Western.

Captain Irwin in his "State and position of Western Australia, 1835," speaks of the great value of the York district for grazing purposes:

> There are extensive tracts of undulating surface, covered with short, sweet grass, admirably suited for merino flocks. Those of Messrs. Bland and Trimmer, which have been there some years, fully justify this assertion, from their rapid increase and healthy condition. Sheep are there exempt from a disease (supposed to originate from feeding in marshy pastures), from which several flocks to the west of the range have suffered severely.

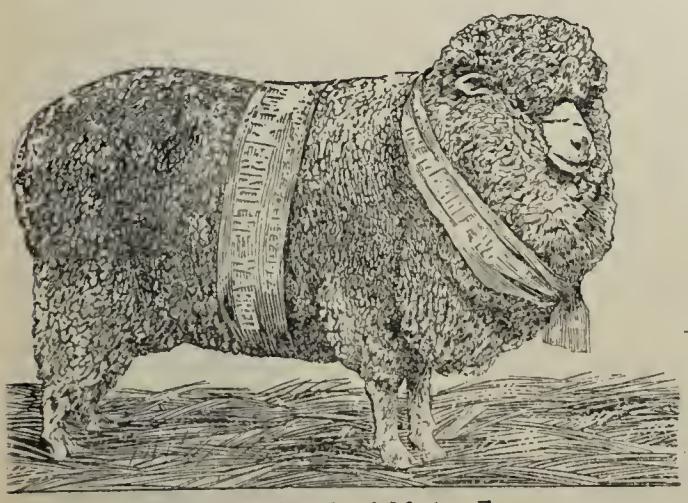
Dr. Harris, in an address to the Agricultural Society in October, 1834, said:

> No country in the world can boast of grounds more favourable for sheep than the York district of this Colony, where some flocks have been for some time established with such success as to dispel every doubt, and clear the prospects of the settlers at large.

Captain Irwin refers also to settlements on the Helena River, particularly those of Messrs. Tanner, McDermott, Ridley, Whitfield, Thompson, Trimmer (two), Wells, Lewis, Boyd, Brown, Drummond, and Captain Meares, late of the Life Guards. Mr. Tanner he speaks of as "one of the most scientific and extensive farmers in the Colony." Further up the river was the establishment of Mr. Yule:

> One of the most complete. His people are Scotch; and, by their trustworthiness and sobriety, added to industry and skill in their occupations, and above all their attention to their children's education, and their observance of the Sabbath, they uphold the high character generally acceded to the Scottish peasant both at home and abroad.

Further on, were the properties of Messrs. Lennard and Brockman, who " practice the improved methods of culture adopted in Essex and Kent, from which countries they respectively come." Beyond where the river was navigable, Messrs. Moore, Tanner, Shaw, Brown, Burgess (three), Bull, Leake, Mackie, and others had established considerable flocks. Henley Park, owned by Mr. Mackie, the Colonial Judge, and Captain Irwin, was being developed by Mr. Richard Edwards (a settler brought out by Mr. Peel).



West Australian bred Merino Ewe.

On the Canning river at this time were the properties of Major Nairne, Messrs. Phillips and Davis, Captains Bannister and Pegus, and Messrs. Bull, Yule, Hester, Gregory, Bickley, Leroux, Drake, and Morgan. Near the mouth of the estuary of the Murray river, forty miles south of Fremantle, were settled Mr. Peel, Captain Byrne, and Mr. Hall, but their prospects did not seem to be so fully assured.

> " Should a good understanding be now established with the natives," wrote Captain Irwin, " it will probably prove a valuable district for tillage and grazing. That it is well adapted for the latter purpose is indicated by the circumstance that a considerable herd of wild cattle in fine condition has been seen in that quarter, which must have rapidly increased, being the produce of such as had strayed from the Government herds, and those of the settlers at an early period of the Colony. Mr. Peel, though with a very reduced establishment, continues to prosecute his farming operations with great energy and perseverance ; and has displayed singular fortitude considering the severe losses he has sustained."

The third annual report of the Directors of the Agricultural Society of Western Australia, issued in 1834, speaks of fine ewes and rams imported from Saxony by Mr. M'Dermott, at great expense ; and of the pure merinos from the

flocks of the late Mr. Joshua Trimmer and others, and continues :

> It is gratifying to know that the good breeds of stock bear such a proportion to the inferior that have been and may be imported from the neighbouring colonies, that we have within ourselves the foundation for an unlimited number of first rate horses, cattle, and sheep. The clip of the present season may be rated at about 5,884 lbs.

Following upon the proving by Sir Richard Spencer of the suitableness of the Hay River district for sheep production there was a movement towards Albany. In 1839 Mr. J. Harris travelled a flock of sheep from Perth to the Albany district, and in the same year Mr. John Hassell (then in command of the ship "Dawson") selected land in the Kendenup district near Albany which he stocked with sheep from the Eastern States. Thus within ten years of the first settlement at Swan River the pastoral prospects of an area of country several hundreds of miles long and extending inland some fifty miles had been more or less established.

Captain George Grey (afterwards Sir George), in his explorations of 1839 near Shark Bay and southwards discovered the Gascoyne, Irwin, and other rivers as well as the Victoria Plains, and reported much of the land suitable for pastoral purposes. Pastoral settlement spread north and south and by 1842 there were over 60,000 sheep in the State. For another twenty years sheep farming was chiefly confined to the south-western division, and by 1866 the number of the flocks was still under half a million.

Shipping Sheep from Carnarvon.

The way was opened for big things by F. Gregory, who in 1861 conducted the earliest exploration in the north-west. His report of vast areas of well grassed lands, stirred

the imagination of the enterprising colonists and in 1863 a party of settlers, headed by Mr. Walter Padbury, landed at Cossack with a few hundred head of stock. They were quickly followed by others, and the great pastoral industry of Western Australia was firmly established.

One of the pioneer settlers of the North, Mr. A. R. Richardson, in his book "Early Memories of the Great Nor'-West" has given a restrained but graphic account of the difficulties and hardships by which they were confronted. The little schooners, that alone traded up the coast from Fremantle, were of 25 to 60 tons: some smaller, and the voyage often took more than a month. Mr. Richardson himself sailed in a 60-ton schooner from Cossack to Geraldton, the voyage taking 47 days. The schooner "Emma" which left Nickol Bay for Fremantle in March, 1867, with 42 persons on board, was never heard of again.

On shore the handful of settlers, divided from civilisation by hundreds of miles of trackless bush, were in constant danger of attack by natives. Messrs. Panter, Harding, and Goldwyer, three members of a party that had landed at Roebuck Bay set out to examine the country to the south. They beat off one night attack, but on the following night the natives came in greater numbers and the three, after a stubborn defence, were killed. Others suffered a similar fate, and certain districts, such as the Ashburton, were abandoned for a time because of the hostility of the natives.

No attempt can be made to apportion credit amongst those who, in the north-west during the sixties, laid the foundations of the merino wool industry. Happily in many cases the names of the pioneers are perpetuated by the present holders of the properties: the sons are reaping where the sires sowed. History records no higher heroisms than were furnished by the little band of women who accompanied their husbands into then savage and inhospitable lands. In 1863 Mr. John Withnell, left his farm at Hillside, Beverley, and with wife, young family, and stock voyaged in the barque "Kestrel" to the north-west. After an unsuccessful attempt to land cattle, sheep, and horses at Port Hedland, he landed at Cossack and

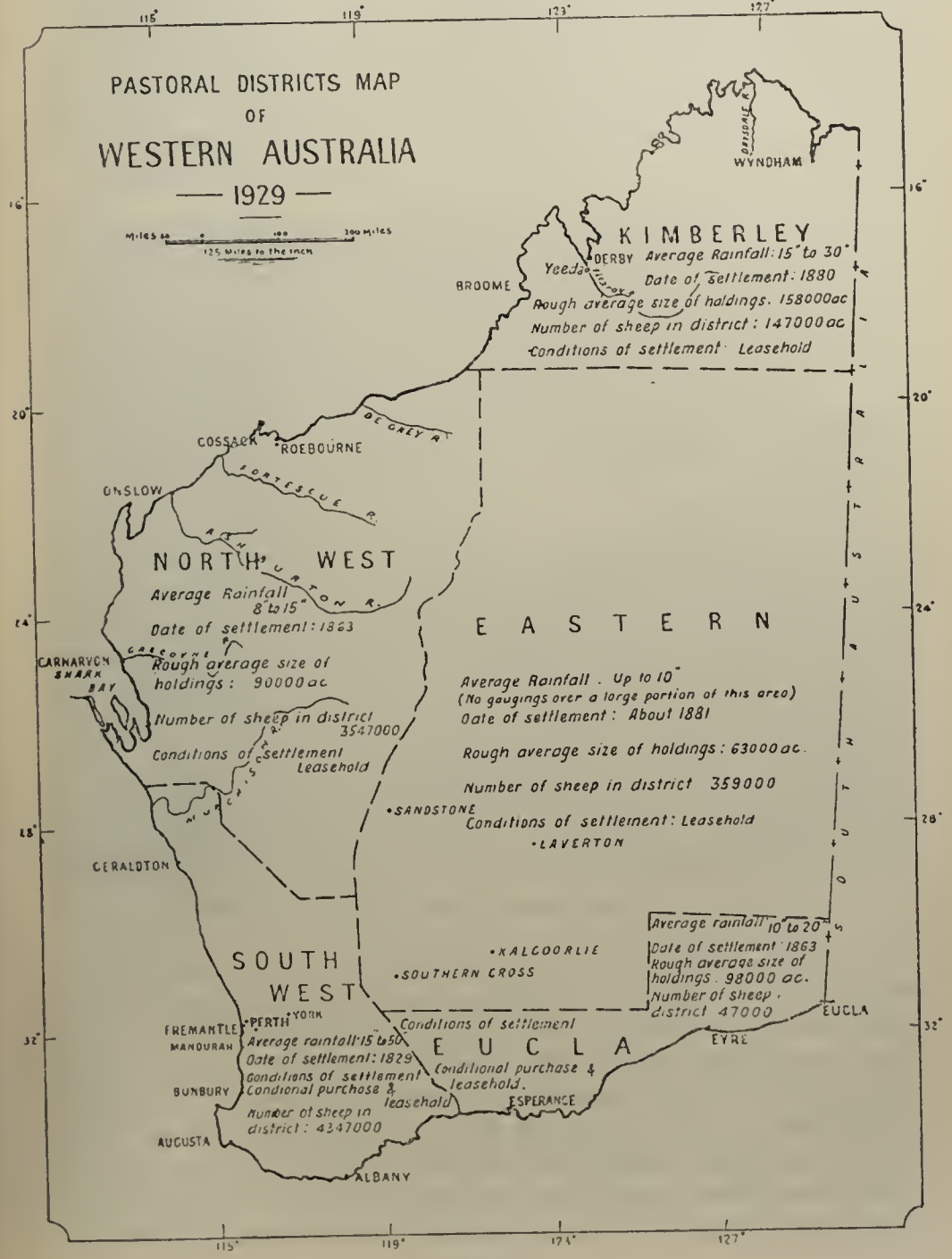
drove his stock to the Roebourne Pool. As night was falling Mrs. Withnell, carrying her child, pointed to an adjacent hill and asked "what place is that?" "Our camping ground for to-night," was the reply. "Then," said Mrs. Withnell, "'tis a welcome sight," and Mt. Welcome it is called to this day.

Typical Shearing Shed.

Another important achievement was the taking of the first flock of sheep to the Kimberleys by George Paterson, in 1880, following upon the reports furnished by Alexander Forrest of his explorations of the previous year. Leaving Perth in October Mr. Paterson travelled by boat to Beagle Bay and then overlanded 1,500 sheep to Yeeda Station on the Fitzroy, south of Derby. Though the distance was only a hundred miles the journey took six months because of the necessity for remaining at one watering place until another within ten miles could be located. The party consisted of four whites and three natives and they got the sheep through with small loss. Mr. Paterson's experience induced many others to go to the district, and soon there were a number of flourishing sheep stations along the Fitzroy River.

The accompanying map may convey some idea of the wide diversity of the pastoral country, and will indicate the divisions in which the industry is chiefly located. Though first settled, the south-west has not always been the principal sheep district. In the big open spaces of the north-west the industry developed rapidly after the first establishment in 1863, and that division soon became the chief home of the merino sheep in Western Australia. It was not until the development of the wheat lands and

the general adoption of mixed farming that the south-west forged ahead again, until now there are more sheep in the agricultural division than in all the rest of the State. The map also sets out the conditions under which the land



is held in the different divisions. The leaseholds—maximum area one million acres—have a tenure expiring in 1948. In the south-west the bulk of the land is either freehold or conditional purchase in process of translation to freehold, the areas ranging from a few hundred to several thousand acres. The average rainfalls given in the map show a very wide variation even within the confines of a single division. In the Eastern Division the average rainfall in many portions is far below the 10 inches enjoyed by the most favoured localities in that division.

Pastoral Homestead from the air.

In North Kimberley the basaltic country changes from stony hills to black soil plains having a great depth of free soil, with fine grasses, and lightly timbered with coolibah, box, iron bark, nut wood, and other trees. Lime occurs abundantly. The sandstone country varies in quality according to the amount of rock it contains. On the table lands are large areas free from rock, while the scoured areas near the coast are a mass of broken sandstone. The sandstone areas carry soft spinifex, fair grasses, leguminous

plants, and many varieties of top feed. The timbers are chiefly woollybutt, messmate, wattles, pines, swamp banksia, and kurrajong.

Intersected with many large rivers, and innumerable creeks and springs, the Kimberley country enjoys an abundant water supply. The rainfall varies from 15 to 30 inches, with up to 70 inches in parts on the extreme north-west coast line. January is usually the wettest month in the far north, and February and March from Broome to the North-West Cape. The rainy season throughout is from October to April.

South-west of the Kimberleys and extending to the coast is the North-West, embracing the meteorological divisions known as the De Grey, Fortescue, West Gascoyne, and East Gascoyne, the former two being north, and the latter two south of the tropic of Capricorn. This country is watered by the De Grey, Fortescue, Ashburton, and Gascoyne Rivers, with many tributaries and smaller streams which, with the exception of occasional pools, are mostly dry during portion of the year. The large volume of water that comes down during the rainy season, forms subterranean supplies, occasionally coming to the surface again, as in the case of the wonderful pools of ever-flowing water, from the Fortescue River, at Millstream Station, discharging many million gallons daily at all seasons of the year.

Water Trough, Carnarvon District.

From Hamelin Pool (south of Carnarvon) extending hundreds of miles northwards is a great artesian basin, the water from which, tapped by artesian bores is unexcelled for stock. On many of the stations, particularly in the West Gascoyne, miles of channels and open drains convey this water to the sheep in distant portions of these holdings.

The natural herbage in these divisions consists of Mitchell and Flinders grass, wind grass, wandarrie grass, soft and buck spinifex, parrakalia, salt bush, and blue bush. Almost every plant is edible and is consumed by stock at some season of the year.

In the East Gascoyne (Murchison and North Murchison) division the herbage is similar to that of the lower portion of the West Gascoyne. The Murchison is the principal river, but in the Sandford and several other streams and tributaries there are permanent pools even in the driest season. Splendid stock water is obtained from wells sunk to a depth of 20 to 70 feet. These are equipped with windmills, or oil engines, large storage tanks, and watering facilities for the stock. During a good season there is an abundance of rain water in clay pans. This district is tapped by the northern railway system.

The average rainfall in the De Grey division is 13½ inches, in the Fortescue 9½ inches, and in the East and West Gascoyne about 9¼ inches.

Grass at Cole's Creek, Eastern Goldfields.

The South-Eastern meteorological division (East Murchison) forming the southern portion of the eastern division indicated on the map, runs from a point slightly north of Sandstone east to the South Australian border, and south to Southern Cross, thence eastward again, embracing the goldfields areas of Southern Cross, Coolgardie, Kalgoorlie, Menzies, Laverton, Leonora, and Lawlers. But recently settled, this country is attracting much attention from local and eastern pastoralists. Many competent judges consider it equal to the best in the State. Its development has been rapid in the last five years and

promises to continue. Water is scarce, and dingoes are prevalent, but there is an average rainfall of 10 inches per annum and practical settlers, well provided with capital, will soon overcome existing difficulties.

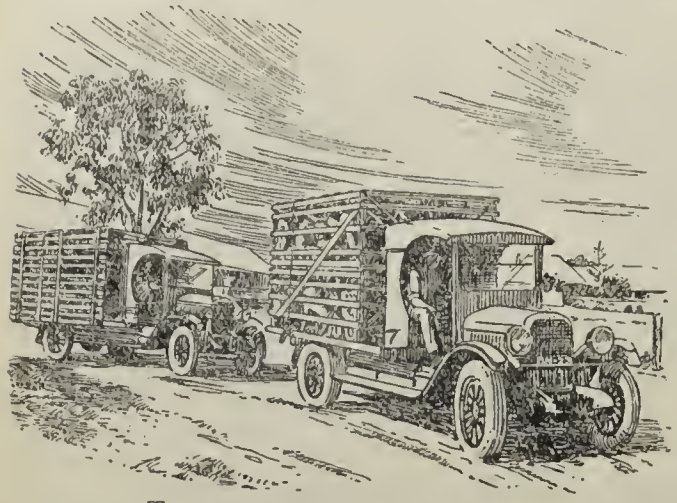
Wildflowers in Laverton District.

The Eucla meterological division extending from Hopetoun along the coast to the South Australian border and including Balladonia, Eyre, and Eucla, enjoys a rainfall varying from 10 to 20 inches, but the pasture is not so good as in other portions of the State. This, and lack of facilities of transport, have retarded settlement.

The South-West meterological division covers the wheat belt, and the dairying, orchard, and timber country. It has a rainfall varying from 15 inches to 50 inches. The extension of mixed farming in the wheat belt, the development of the fat lamb industry, and the establishment of stud flocks, have led to an enormous increase in the number of sheep carried in this division, whilst of recent years the cultivation of clovers and the use of superphosphates have given these southern lands a carrying capacity previously undreamed of. It is chiefly the development in this area that has caused the flocks of the State in the short space of four years to increase by upwards of two millions.

Subterranean Clover Pasture, York.

The North-Eastern meterological division—the northern half of the eastern division on the map—extends over a vast tract of country from the Kimberleys to the south-eastern division, bounded on the west by the De Grey and Fortescue divisions, and extending 500 miles eastward to the border of the Northern Territory. It is practically unoccupied, and though the rainfall is lower and less certain, and the quality of the herbage inferior to that of other portions of the State, examinations suggest that in parts it is by no means devoid of pastoral possibilities.



Transporting Sheep by Motor Truck.

For many years there have been extensive importations of high class rams and ewes, chiefly from the older established flocks of the Eastern States, and during the present century an enormous development has taken place in the building up of stud merino flocks. The latest edition of the Register of Stud Merino Flocks in Australia contains particulars of nearly 150 West Australian stud flocks. Above a hundred of these studs have been established since the war : more than half of them during the last seven or eight years. Their effect has been to substantially

Camels carting Wool in the North-West.

increase the yield of wool per sheep, until now it compares favourably with that obtained in the Eastern States.

Progress in an industry like wool growing cannot be uniform from year to year, so much depending on the seasons. The measure of stability attained by the industry is indicated by the extent of progress in a good year, and the minimising of losses in a bad year. The year 1927 was favourable and witnessed wonderful expansion. The number of sheep increased by nearly a million, the wool clip by over 9,000,000 lbs., and the average weight of the fleece from 6.8 lbs. to 7.1 lbs.

A forward movement of major importance during recent years has been in the method of selling the wool. Prior to the war only a few thousand bales were marketed locally, the bulk of the season's clip being purchased privately or shipped to the Eastern States or London for realisation. The British Imperial Government wool scheme came into operation in 1916-17 and portion of that season's clip was received into stores at Fremantle, Albany, and Geraldton where the wool was appraised under the jurisdiction of the Central Wool Committee on behalf of the Commonwealth Government. This scheme continued for four seasons, the total quantity appraised being 429,748 bales.

Motor Truck carting Wool.

A comprehensive scheme was drawn up by a technical advisory board of wool experts to deal with the Australian wool clips during this appraisement period, a system of types being decided for the valuation of the wool. These types numbered 848, and to each type number was affixed a monetary value in relation to the flat rate of 15½d. per lb. on a greasy basis for the whole clip. The average value per bale for Australian and New Zealand in the first season was £21 12s. 8d. and in the fourth season £22 15s. 7d.

At the termination of the appraisement scheme, wool selling by public auction was instituted in Perth, the opening sales being held on December 6, 1920. Sixty sales have since been held, and each season has shown an appreciable increase in the quantity of wool submitted for realisation at the Perth auctions. In the 1927-28 season the quantity disposed of at auction locally was over 153,000 bales, representing 75 per cent. of the wool clip of the State—which totalled a value of approximately £5,000,000. It is expected that for the 1928-29 season a still larger quantity will be delivered into the Fremantle stores for auction.

Wool displayed prior to Sale, Fremantle Stores.

Under the appraisement system it became necessary to erect commodious wool stores for the accommodation and display of the clip, and these have been largely added to since local auctions were established. One store alone has an area of eight acres of floor space, including $2\frac{3}{4}$ acres of show-floor space with a capacity of 7,500 show bales. Further extensions are contemplated at the different stores to meet the growing demand. The most up-to-date methods have been adopted for receiving the wool, displaying it on excellently lighted show-floors—comparing more than favourably with any others in the Commonwealth

—dumping it according to buyers' requirements, and delivering it *ex* stores. In the season many hundreds of men are employed at these stores.

There are three main divisions from which wool is obtained: the Great Southern, or heavy rainfall district, the Murchison, or mulga country, and the Gascoyne and northern districts. From each the wool is of a distinct type. Wools from the pastoral areas in the north are much sought by Continental buyers, whilst Yorkshire has a preference for those from the Great Southern and agricultural districts. A high standard evenness of quality and type has been attained. Leading purchasers from all parts of the world are represented at the Perth sales, and the values realised equal those at other centres.

The growth of the industry and the improvement that has been effected in the quality of the sheep during the past twenty years are indicated in the following figures :—

Year.	Sheep shorn.	Total Clip in Lbs.	Average Weight per Fleece.
1907	3,684,974	18,508,561	5 lbs.
1917	6,209,856	38,294,093	6.2 ,,
1927	8,447,480	59,346,414	7.1 ,,

A branch of the industry that so far has progressed slowly, but which is now ripe for important development, is the raising of fat lambs for the local market and for export trade. The high price of wool has been an element in retarding the fat lamb trade, but with the recent increase in artificial pastures, the prospects of substantial profits in this direction are appealing to pastoralists. Lambs, from merino ewes by Dorset Horn rams, weighing 27 to 28 lbs. have sold in the local market at over 30s. per head. Using Dorset Horn, Border Leicester, English Leicester, Shropshire, Romney Marsh, Lincoln, or Southdown rams with merino ewes or with crossbred ewes produced by

mating one of the British long wools with the merino, small graziers are taking up the lamb raising business boldly and scientifically, and it will not be long before Western Australia takes her place along with the other States of the Commonwealth in the export trade. Facilities—hitherto not used in accordance with their capacity—are available at the Fremantle freezing works for the carrying on of this industry.

Fat Lambs.

XVII: WHEAT: THE STATE'S PREMIER INDUSTRY.

ESTERN AUSTRALIA a little more than twenty years ago was importing flour to meet the bread requirements of its people; for the past two years its wheat production per head of population has been as high as that of any country in the world, and the value of wheat exported has exceeded that of any other commodity. The possibilities of immediate expansion are great; in a very few years this State is expected to grow more wheat than any other in the Commonwealth; and it is by no means improbable that ultimately its export will exceed that of all the rest of Australia combined.

The earliest settlers made wheat growing one of their main objectives, but operations were at first confined to the lands westward of the Darling Ranges. The results were encouraging. The grain produced was of fine quality, averaging from 62 to 65 lbs. to the bushel, some of it weighing as much as 68 lbs. Samples sent to England were highly approved, and preserved for seed there. As to the yield, it is recorded that in 1832 and 1833—

> a piece of alluvial land, measured with exactness, and sown with wheat, gave, the first year, a produce rate of forty-three bushels; and the second year, of very nearly sixty-one bushels to the English acre, without the aid of manure.

Experience soon demonstrated the superiority for wheat growing of the land over the ranges, whilst the localities of Perth and Fremantle were more favoured for vegetable and fruit growing. Captain Irwin, speaking of the vegetables, says:

> In Perth a radish, growing in sand, was exhibited in 1833, which measured, round the root, more than four feet; and a plant of mangel wurzel, in sandy soil of a better quality, on the Upper Swan, was six feet in circumference.

For many years wheat growing proceeded in a leisurely way. In 1850 the area cropped was 4,416 acres but the yield is not stated. Twenty years later it had increased to 26,640 acres, yielding 316,769 bushels, or just under twelve bushels to the acre, which is approximately the present average yield for the entire State. Another twenty years (1890) saw an increase of acreage to 33,820 and of yield to 467,389 (well over 13½ bushels to the acre). The inrush of people consequent on the discovery of gold found the State growing just enough wheat for its old population, and importation began. By the end of last century the area under wheat was only 74,308 acres, and the yield was 774,653 bushels: or 10½ bushels to the acre.

Virgin Forest Land.

The gold rush quickly gave a great stimulus to the growing of hay. For several years all the food and clothing of the people on the goldfields and the equipments for the mines were carted by horse and camel teams, and chaff brought fine prices. This provided the farmers of the then established agricultural districts with money for the development of their properties, but for nearly fifteen years after the rush of 1892, flour was still imported from Eastern Australia.

It was the depression, resulting from the decline in gold production, that caused wheat growing to be taken seriously. From 1905 onwards there was lack of employment on the goldfields, on the wharves, and throughout the State generally. The civil service was found to be over-manned. The outlook was gloomy. The emergency found the man. James Mitchell, banker and farmer, a native born West

Australian, in August of 1905 was sent to Parliament by the people of Northam to whom he had long been preaching the possibilities of wheat growing. As Minister for Agriculture—for many years in an honorary capacity—he put his theories into practice. To bring together the idle men and the idle land and to employ the credit of the State to finance their operations up to the stage of production, was the sum and substance of his policy.

The older settlers had demonstrated the suitableness for wheat of the Avon Valley and adjoining country, and of much of the Midland district, and when the Coolgardie water scheme gave an assurance of domestic supplies along its route enterprising farmers—ignoring general predictions of failure—pushed wheat growing eastward. Mr. Snook at Meckering, Mr. Packham and Mr. Donnan at Tammin, Mr. Leake at Kellerberrin, Mr. Growden at Nangeenan, Mr. Forrester and Mr. Nunn at Southern Cross, in turn grew good crops at satisfactory profit right into the goldfields area. A combination of generous government assistance with splendid individual effort has led, since the first year of the present century, to an expansion in the area under wheat for grain, from 94,700 acres to over 3,160,000 acres: a thirty-three fold increase in twenty-seven years.

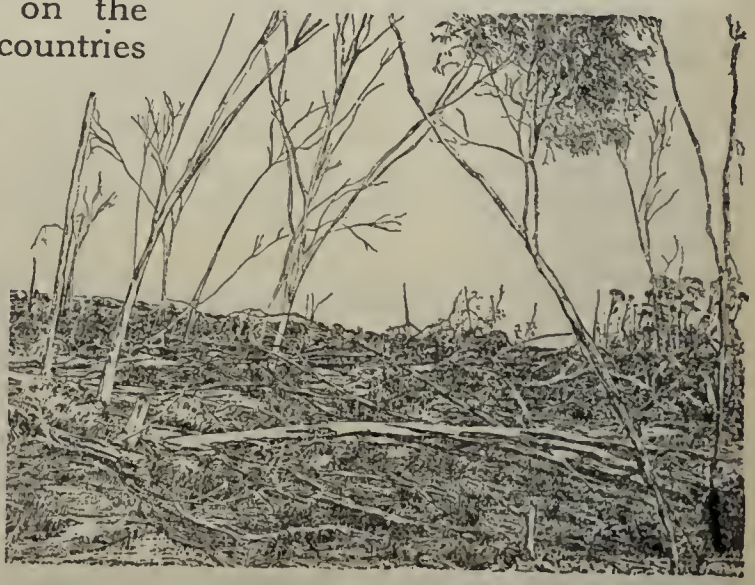
Wheat land is cheaper than elsewhere in the Commonwealth; the land laws are generous; payments for land are spread over long periods; and the Agricultural Bank is the most liberal financial institution to be found in any country. Every facility is afforded to the man with little or no money to obtain a farm of his own, provided he has the ability and the willingness to work.

The wheat belt is roughly triangular in shape. It stretches nearly six hundred miles north and south and varies in width from 50 to nearly 200 miles. It is well served by railways and favourably situated for shipping ports. Of these there are five: Geraldton, Fremantle, Bunbury, Albany, and Esperance, and no part of the wheat belt is more than about 200 miles from a seaport.

The wheat grower is exceptionally favoured by the climate. The rainfall ranges from 10 inches to 20 inches

per year. In some districts it may be light, but it is regular, and—an element of extreme importance—about 70 or 80 per cent. falls during the autumn, winter, and spring, when it is most needed by the cereal crops, and for the preparation of the seed-bed. Droughts are almost unknown, because the wheat belt is within 200 miles of the moist sea breezes, without any very high mountain ranges to intercept the moisture.

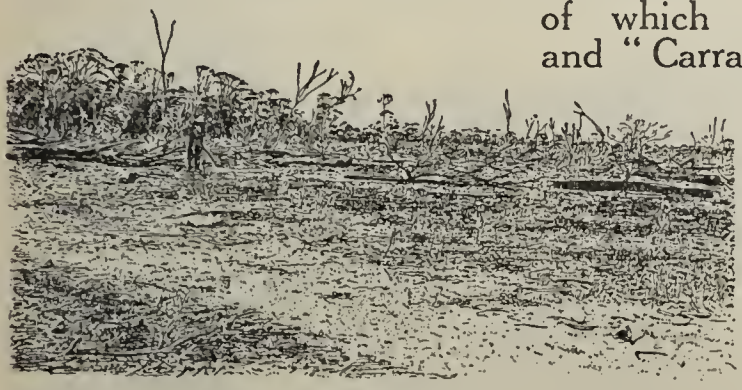
The bright, dry summer minimises the risk from rust, and renders harvesting easy and cheap. It brings within the capacity of one machine every detail of harvesting, which in most other countries involves much labour, complicated machinery and heavy expense. Here harvesting is completed in one operation ; and as the grower ends his labours for the day he leaves behind him grain bagged for the market, capable of conversion, almost at a moment's notice, into coin of the realm. All this is possible because the grain ripens on the stalk. In countries where moister conditions prevail the grain has to be cut before it ripens, and the maturing process must then take place in the stook and stack, making harvesting comparatively elaborate and costly, whilst the grower does not know the financial results of his season's work until months after the building of the stacks has been completed.



Felled Timber ready for burning.

Again, mainly because of favourable climate, the quality of the wheat is unsurpassed. The colour of the flour milled from it is excellent, and its "strength" good, so that nutritive bread of high quality is made without blending.

As the wheat is bright and dry, it is very suitable for mixing with the British wheats to impart colour and bloom to the flour. From the milling standpoint the wheat can be divided into two classes: "Premier Strong White" and "Strong White," the latter predominating. The production of varieties of the "Premier Strong White" class, of which "Comeback" and "Carrabin" are typical, renders it unnecessary to import any kind of wheat from overseas in order to produce the very highest quality flour, for it has been found that these varieties, as grown here, are equal in strength to the famed "Hard Manitoba."



After the Fire.

The country in the wheat belt is, mainly, flat and gently undulating, the general absence of stiff slopes making it highly suitable for tillage operations. The soil and natural vegetation are most varied, ranging from the rich salmon and gimlet forest to the less fertile "sand plain" or heath-like country. The vegetation may be conveniently classified into the following types:—Forest, mallee, brushwood, sand plain or heath, woodland, salt pan vegetation.

The predominant trees in the forest country—which is graded as first class—are the salmon gum (*Eucalyptus Salmonophloia*), gimlet or fluted gum (*E. salubris*), and red morrell (*E. longicornis*). The "gimlet" is usually found on the lowest levels and is indicative of the heaviest type of soil: a heavy clay loam. The salmon gum grows on the lighter clay loams. Each of these is excellent for wheat, though the best soil is one on which a mixture of both is found. The "morrell" land, particularly the grey type, is much less suitable, and in districts of scanty rainfall is risky and should be left for grazing, for which it is well adapted.

The forest country runs through the wheat belt like broad ribbons, following the low places. Towards the edges of the forest as the ground rises, mallee thickets are usually found, thence, as the ground still rises and the soil becomes lighter, brushwood thickets predominate, until on the highest elevations is the sand plain or heath-like country. Usually the different types are readily defined, though sometimes they intermingle one with another, so that it is difficult to separate them.

Clearing and preparing Scrub Country.

As in the other States, the mallee land is useful wheat country, and in this State, though somewhat surprising, profitable crops are produced even on the light sandy soils. These usually—though not always—overlie a heavier sub-soil of clay or laterite. Where the laterite outcrops on the surface the type of country known as "wodgil" is found. This country, so named because of the vegetation locally called "wodgil," and consisting mainly of acacia shrubs growing upon it, is considered to be entirely unsuitable for cultivation. Where the surface soil is sandy and containing more or less laterite, with the subsoil of clay, "wandoo" or white gum country often occurs. This is forest or woodland country lightly timbered. White gum country is not extensive in the wheat belt and mainly occurs on the wetter fringe, where it is usually cropped with oats.

Outcrops of granite are features of the wheat belt, and on the sandy loams surrounding them is the "woodland" or "park-like" type of country. This is the most open found in the wheat belt, and the trees on it consist of "jam" (*Acacia acuminata*) and, commonly associated with the jam, "York gum" (*E. foecunda*, var. *loxopheleba*). It is well covered with grass and is splendid natural grazing

country. On this account, and because excellent and abundant water is found at shallow depths, it proved most attractive to the early settlers.

Salt-pan vegetation covers the flats adjacent to the "salt lakes." These are formed by the drainage waters from the interior of the wheat belt which flow into depressions from which there is no outlet. As the result of evaporation during the summer, accumulations of salt, gypsum, etc., are formed. Around these are the flats on which samphire and salt bush grow, providing excellent grazing. The soil is usually very alkaline and quite unsuitable for cultivation.

Thicket Country ready for rolling.

The unit farm on forest (heavy land) is from 800 to 1,000 acres. This area is based upon the practice—rapidly being recognised as the standard—that arable land can be used to the best advantage when divided into three main portions :

The first to be under fallow ;
The second to be under crop ; and
The third under stubble crop or stubble pasture.

In addition, it is desirable to have some bush paddocks for the stock and some smaller paddocks around the homestead for special purposes.

A driver and a team of six horses can cultivate, plant, and (with some help at harvest time), crop 250 to 300 acres per season, so that the area for the three portions of arable land is 750 to 900 acres. To this must be added 50 to 100 acres for the stock paddocks, homestead, etc.

On light land (sandy soil) the unit farm is considered to be twice the above area, say 2,000 acres. On such farms larger implements are used, and the area cropped per team is from 350 to 400 acres. Such an area would therefore provide for five portions handled as follows:

The first under fallow;
The second under crop;
The third under stubble crop or pasture;
The fourth under stubble pasture; and
The fifth under stubble.

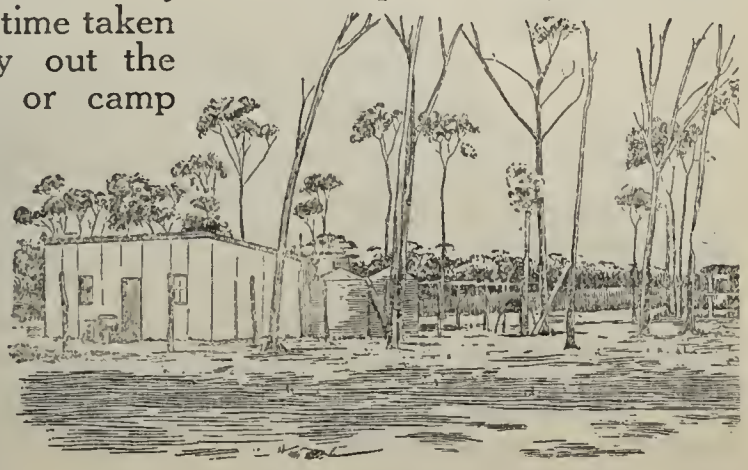
Usually the pioneer settler does most, if not all, of the team work himself, but as the farm becomes developed he generally engages a man to do the team work, whilst he attends to the stock (about 250 sheep) and other miscellaneous work around the farm.

A Settler's First Camp.

The pioneer settler, acquiring a virgin holding, first makes provision for an immediate water supply and establishes communication with some centre from which to obtain his requirements. His next need is living accommodation for himself and for those who are with him. It is usual in the initial stages to have this accommodation of a temporary nature only. All that is necessary in the case of a single man is a tent, and for a married man a simple hessian-covered structure: the genial climate permits of such primitive arrangements without serious hardship or discomfort. There are two main reasons for providing temporary accommodation, the first, that the settler is not sufficiently familiar with the configuration of his holding to determine the most suitable site for the home and farm buildings, the location of which may have an important bearing on the economic working of the farm; and the

second, that he cannot delay other work for the comparatively lengthy period required for the erection of permanent buildings.

However simple the buildings or the camp may be, it pays to take reasonable time to make them comfortable and provide necessary and useful conveniences. The hours spent in this way will be repaid many-fold later by the shorter time taken daily to carry out the routine house or camp duties, and by the increased vim put into the work as a result of cleaner and tidier surroundings.



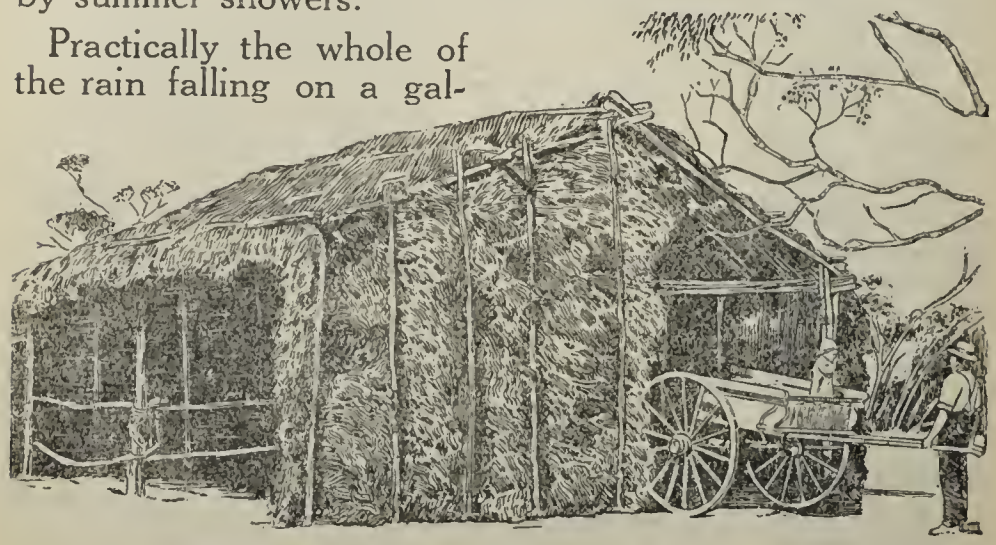
A Settler's First Home.

With living accommodation, temporary or otherwise, available for immediate needs, the next, and fundamental work, is to provide a liberal supply of water for domestic and stock use. No other factor in pioneering development has been the cause of so much hardship and discomfort as the failure to provide early, a good water supply for domestic purposes. It should be clear and fresh, and failing clean, fresh well, spring, or stream water, it should be rain water.

The rainfall is so regular that it is not difficult, nor very expensive, to provide a good supply. It can be readily collected off the roof of any building covered with galvanised corrugated iron. A half ton of this material, used to cover an open shed with a flat roof, will collect at least 500 gallons for every inch of rain that falls. Provided the water so collected is conserved, an ample supply for domestic purposes can be obtained from such a roof. At least one case is known where, by an extension of this plan, sufficient rain water was conserved to provide not only domestic requirements, but also for a team of six horses. The water was stored in three tanks each with

a capacity of about 3,300 gallons; they were made of 10 feet sheets of curved iron and were 8 feet high. In this way about 10,000 gallons were stored: quite sufficient for the teams throughout the season, since the tanks filled by the winter rains were replenished from time to time by summer showers.

Practically the whole of the rain falling on a gal-



Improvised Stable and Shed.

vanised roof can be conserved, and as there are about six and a quarter gallons in a cubic foot, the number of gallons available for storage can be ascertained by a simple calculation. A rough method is to estimate half a gallon per inch of rainfall for every surface foot covered by the building. It is an excellent plan, therefore, to include, as part of the early accommodation, a shed with an iron roof and instal sufficient tanks to store the rain water which falls on it.

Dam covered to save evaporation.

It is the exception to find wheat farms which have a natural permanent water supply. In many cases on light land water is obtained by sinking shallow wells, but usually the much needed provision for stock is made by excavating tanks or forming dams in suitable low lying sites, where the water from a catchment area is led into them by means of drains or gutters. The general size of these tanks is 1,000 cubic yards, but they are preferably twice this size or even larger. Tank sinking costs from 1s. 6d. to 2s. 6d. per cubic yard.

Roller for Thicket Country.

Having made a " camp " or temporary home and arranged for the domestic water supply, the next work to be undertaken is that of clearing. This, in the wheat belt, is cheap and easy. In the forest and woodland (jam and York gum with jam) areas, the trees are generally chopped down during the autumn, winter, and spring—the larger trees axe handle high, and the smaller level with the ground. The term used for this latter operation is " mullenizing." The chopping is done so that the trees fall all the one way, for practical felling reasons and in order to assist in securing a running fire when the burning takes place in the succeeding summer. In the lighter timbered country it is customary to pack the stumps of the bigger trees with the undergrowth. On the mallee and other thicket country, as well as on the heavy scrub " plain," the light timber or scrub is chopped down or rolled down—usually with farm-made rollers constructed from old steam boilers, huge logs, or with lighter logs bolted to a metal framework.

After a few months' exposure to the sun, a hot day in February or March with the wind in a suitable direction, is chosen, and the fire is started. Most of the timber burns readily, even when green, and, given favourable conditions, the fire cleans up the material on the gound, leaving only

a few sticks to be picked up and, if necessary, packed around any stumps remaining to be burned out. If the burn for any reason—say a change in the wind after the fire has started—has been a bad one, more picking up and other work is entailed.

On the lighter "plain" or heath-like country, no preliminary clearing is needed prior to the initial tillage operation. This is done with some kind of disc implement, usually a disc cultivating plough, the clearing becoming part of the preparation of the seed bed. In order to make a good seed bed on this type of land a second ploughing—at right angles to the first—with the same implement, some two or three months later is advantageous. After the second ploughing a considerable amount of small sticks and other debris will be found on the surface. These are collected together with a rake, usually of special design, and burned.

The Fire.

The contract costs per acre connected with clearing in the wheat belt may be set down as follows:—

	Per Acre.
Forest land	25s. to 35s.
Woodland country (jam and York gum with jam)	20s. ,, 30s.
Mallee and thicket—Rolling	10s. ,, 12s. 6d.
Mallee and thicket—Picking up and burning	5s. ,, 10s.
Scrub—Rolling	8s.
Scrub—Burning	5s.

So great has been the desire of the settler to conquer the forest and produce crops that far too little timber has

been left for the purposes of shade, shelter, and firewood. This defect is recognised by many of the later settlers, who are leaving clumps of trees in the paddocks as well as strips of uncleared land, one chain or more wide, on the boundaries of their paddocks. This practice is most desirable and should become general. It adds alike to the usefulness and the attractiveness of the holding.

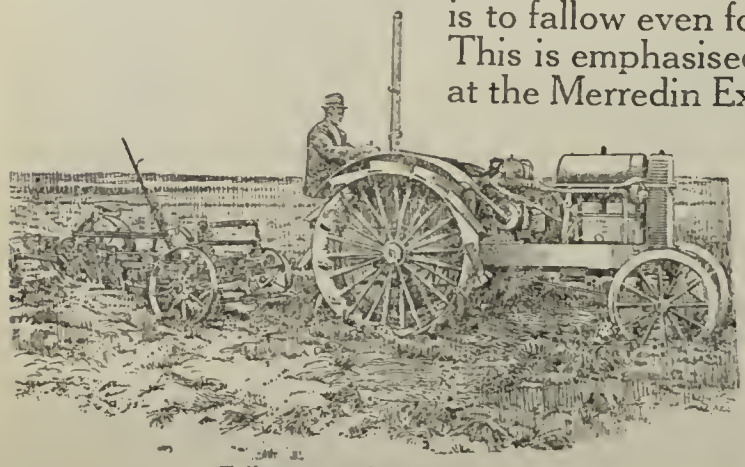
In a new district it is common for the settler to delay the erection of any fences until he has harvested the first, and sometimes several, crops, but later the boundaries of each holding are fenced and, in the majority of cases, convenient subdivision fences are erected as well. The most common is a post and wire fence. When obtainable, the posts are "jam" and have six or seven wires running through them. When "jam" posts are not to be had, boree or rough bark tea-tree (the latter should be stripped of bark), big wodgil, white gum, pine, jarrah, large split salmon-gum or gimlet is substituted. The timber for posts is often found on the holding.

The value of fencing when erected is about £40 per mile, the cost of the wire being about £16 per mile. The presence of the rabbit in the wheat belt has rendered it essential to wire net the boundaries. This necessitates an additional expenditure of £46 per mile.

The condition of the fertile forest soil immediately following the clearing burn is such that a seed bed can be made with little difficulty and very many thousands of acres have been planted, and profitable crops obtained, without any other treatment than literally "tickling" such soil with a "spring-tyne" cultivator. This method will not produce maximum results, to secure which "fallowing" (preparing the land some months before seeding it) is essential, yet on forest land—except on the fringe of the wheat belt where the rainfall is scantier—planting without fallow and after the burn is considered a fair business risk, particularly in the early pioneering stages. The land is new, production costs are at a minimum, financial needs are stringent, and the settler invariably plants his first crop on unfallowed land. The risk of failure is lessened since the felled trees have almost completely covered and

mulched the virgin ground with its centuries of stored up fertility, and the subsequent intense running fire, with the ash deposit, has assisted to make plant food available, and to prepare the seed bed. The condition of the seed bed is, in consequence, similar to that resulting from a partial fallow.

Though the seeding of such land without fallow may be regarded as a reasonable risk, the safer plan, and the one giving the greatest possible insurance against loss, is to fallow even for the first crop. This is emphasised by the results at the Merredin Experiment Farm in 1916, when the crop on fallowed land yielded 12 bushels 45lbs. per acre, whilst the crop on the unfallowed plot was a failure.



Fallowing with Mouldboard.

Land other than forest or woodland, even in districts of liberal rainfall, and all land on the eastern fringe of the wheat belt, should be fallowed from the outset.

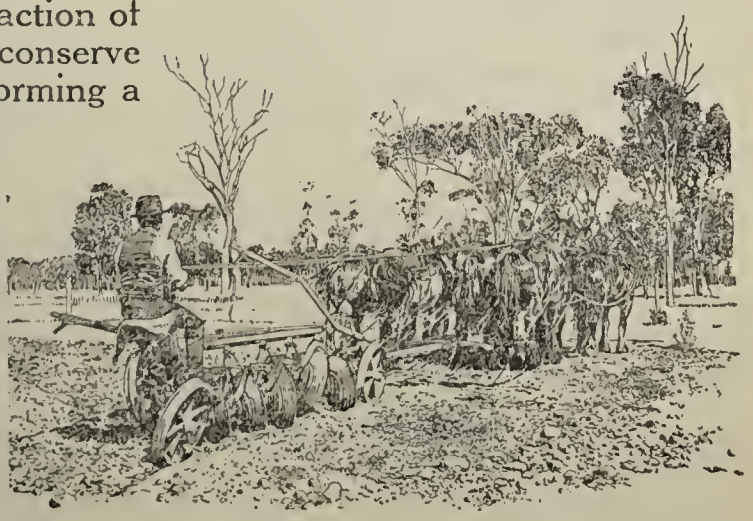
In the conditions obtaining over the major portion of the wheat belt there are four fundamental factors essential to success :

1. Fallowing early and thoroughly ;
2. Planting a suitable variety ;
3. Sowing at the right time ; and
4. The application of a liberal quantity of superphosphate.

" Fallowing " in Western Australia is understood to mean the initial operation connected with the preparation of the seed bed, when this takes place some time prior to planting, and generally during the months of June, July, and August. The tillage at that season is referred to as " winter fallowing," to distinguish it from the initial operations when carried out during the summer months. By fallowing the land to be cropped, the work of the farmer's year has a

more even spread. Instead of cramming both preparation and seeding into one busy period—which should be devoted mainly to seeding—the former operation is carried out during the slacker period after seeding. The weather and soil are then better fitted for this laborious work, and it can be performed more easily and cheaply.

The direct action of fallowing is to conserve moisture by forming a soil mulch and suppressing the growth of weeds; its indirect action is to stimulate the activity of the nitrifying bacteria, thus transforming unavailable into available nitrogen. The influence of fallowing in controlling weed growth is evident even in districts of higher rainfall. Owing to weed growth the yield of wheat on an acre experiment plot at Merredin, cropped continuously with wheat since 1916, dropped to 3 bushels 50 lbs. in 1920, and in 1921 the crop was an entire failure. The land was fallowed in the succeeding year to control the weeds, and in 1923 the crop was clean and the yield rose to 25 bushels 44 lbs.



Fallowing with Disc.

Disc Cultivating Plough.

The benefits to be derived from fallowing may be gauged by the results obtained at the Chapman and Merredin

Experiment Farms with wheat grown continuously and also with wheat grown after bare fallow on adjoining plots cropped in alternate years. The average results are—

	CHAPMAN.			MERREDIN.		
	Period.	Bus.	lbs.	Period.	Bus.	lbs.
Continuous wheat after fallow	1918-23	11	17	1916-21	22	43
Continuous wheat without fallow	1918-23	4	35	1916-21	10	47
Increase in favour of fallowing	....	6	42	....	11	56

Even on land on which a wheat crop is obtained only once in three years, with sheep grazing in the intervening period, the best results are secured by fallowing, as may be seen from the following tables :—

MERREDIN EXPERIMENT FARM.

	1925.		1926.		1927.		Average 3 years.		Percentage.
	Bus.	lbs.	Bus.	lbs.	Bus.	lbs.	Bus.	lbs.	
Fallowed	17	52	18	33	29	23	21	56	154
Unfallowed	6	40	10	44	25	24	14	16	100
Difference in favour of fallowing	....		....		....		7	40	54½

CHAPMAN EXPERIMENT FARM.

	1926.		1927.		Average 2 years.		Percentage.
	Bus.	lbs.	Bus.	lbs.	Bus.	lbs.	
Fallowed	17	20	21	39	19	29	133
Unfallowed	12	24	16	56	14	40	100
Difference in favour of fallowing	....		....		4	49	33

Fallowing should be carried out early. During the past three years an experiment has been made at Merredin in which the results obtained from plots fallowed early in

June have been compared with those from plots fallowed late in August. There is an average difference of 29 per cent. in favour of the early fallowing. The actual results during three years were :

Date of Ploughing.	1925.		1926.		1927.		Average 3 years.		Percentage.
	Bus.	lbs.	Bus.	lbs.	Bus.	lbs.	Bus.	lbs.	
June	15	20	16	24	25	52	19	12	129
August	11	23	8	29	24	48	14	52	100

Summed up, some of the advantages of early fallowing are :

1. Easier ploughing ;
2. A better chance is afforded for the destruction of weeds ;
3. More moisture is conserved by the longer fallow, thus providing a better insurance against dry spells at critical periods;
4. Early fallowing renders it possible to work the soil down to a good tilth, resulting in an even, strong germination ;
5. It stimulates the production of nitrates and sweetens and aerates the soil ;
6. Observations show that early fallowing helps to keep down " take-all " ;
7. Increased yields. Over a period of three years the early fallowing has given an increased yield of 4 bushels 20 lbs.

Early fallow means better fallow and better yields. It is necessary to do the work thoroughly. Sometimes farmers, with the object of getting over large areas of ground, fallow hurriedly, assuming that any portions of the land that may be missed by the implement will be worked at the next cultivation. Such portions, however, receive the advantage only of a very late fallowing, consequently there is a serious reduction in yield.

The implements used for fallowing are ploughs or cultivating ploughs (*i.e.*, skim ploughs). It has been found by experiment and experience that it is immaterial what type of plough is used, provided the land is suitable for either. The disc type, for instance, is unsuitable for stony land, and the mouldboard for scrub land.

Exhaustive tests carried out at the Merredin and Chapman Experiment Farms have shown that practically

the same results are obtained when the initial ploughing is 4in., 6in., or 8in. deep. The deeper ploughing serves no useful purpose and is more costly. The implement which will most economically till the soil about 4in. deep is, therefore, the one to employ.

On forest land the plough proper—4 and 5 furrows—is likely to do the work most efficiently, and control the weeds more thoroughly than the " cultivating " or " skim " type ; the latter, however, is very useful on lighter soils, and can be used in the wider sizes of 8 to 14 furrows.

Mouldboard Cultivating Plough.

After fallowing during June, July, and August, the land requires to be cultivated once or twice in the spring (September and October) so as to leave it with a loose surface (but not too fine), and in such a condition that a final cultivation in the autumn, just prior to seeding, will leave the seed bed in proper tilth. Usually two cultivations in the spring will be sufficient, but the necessity for minimising evaporation and destroying weeds—particularly the latter—will determine what cultivation, if any, the land will receive during the spring and summer. Sheep render excellent service in controlling weeds.

Provided the ground is clean and not too hard, the most suitable implement for cultivating fallowed land is the " spring-tyne " cultivator, but sometimes the ground, after the winter rains, is too hard or too weedy and the " skim " plough, or disc, is needed. The first cultivation in the spring, if desired, may be quite as deep as the original operation, but the second and subsequent cultivations should be shallower, particularly the final ones, which should not exceed two inches, so that the compact condition of the sub-surface soil, just below the mulch—which

is so necessary for the best results with wheat—shall not be destroyed. As the seed should be placed on this compacted soil, it is obvious that it should not be more than two inches deep, otherwise the young plant may have difficulty in reaching the surface.

As seed invariably germinates better if the surface soil has just been stirred, the final cultivation of the seed bed is given just prior to the planting. This also helps to control weed growth, an object best achieved when sowing is delayed sufficiently long after rain—say 10 to 14 days—to afford the weeds an opportunity to germinate so that the weed seedlings may be destroyed.

Big Team for Harrowing.

The seed is planted by means of a seed and fertiliser drill, or very often now-a-days by a "combine." This latter is an excellent type of a spring-tyne cultivator, with which is combined a seed and fertiliser drill, hence its name. The "combine" has been designed so that the final operation of cultivating the seed bed and the planting of the seed may be carried out simultaneously by one team and one driver.

Slow Maturing British Varieties.

In choosing the variety to be planted it is important to obtain one which is prolific and suitable to local conditions.

The importance of this is easily seen from the illustration herewith. The first four labelled rows of wheat are all prolific varieties. Their names are "Dreadnought," "Square Head," " Fenman," and " Yeoman." The two last named are so prolific that in Great Britain they have yielded over 90 bushels per acre. They are shown as they appeared at the Chapman Experiment Farm at the end of spring (middle of October) when the crops, if they are to yield well, should be well headed as is the control variety shown on the left. Prolific as the British varieties are under British conditions, they are quite unsuitable for Western Australia, because they require a longer period for maturity than the season will allow. Instances like these show that the correct choice of a suitable variety may mean the difference between success and failure.

A wheat, in addition to yielding well and maturing early, should also—

(a) Be of a satisfactory milling quality;
(b) Have strong straw;
(c) Hold its grain well;
(d) Resist or escape disease.

No variety has been produced which is entirely satisfactory in all respects, but there are a number which more nearly approach the ideal than the majority. Of these the following have been chosen as standard varieties representing the best of the best types, classified according to their maturity :—

Late	Yandilla King.
Mid-season	Nabawa.
	Baroota Wonder (for hay only).
Early	Gluyas Early.
	Carrabin (of Premier milling value).
	Comeback (of Premier milling value).
Very Early	Geeralying.
	Noongaar.

Having chosen the variety, it is necessary that it be planted at its proper season. If planted too early it is likely to become affected with the disease " septoria," and in extreme cases fail to form grain ; if planted too late the yield may suffer. The extent of the reduction in yield due to late planting is shown by the results of an experiment conducted at the Merredin Experiment Farm, during the

past six years, and in which the same variety was planted in the middle of May, June, and July respectively each year. The average yields were :—

	Bush.	lbs.	Percentage Yields.
May planting	26	23	100
June planting	22	44	86
July planting	13	52	52

There was a loss of 14 per cent. by delaying the planting for one month, and 48 per cent. by delaying it for two months after the most suitable date.

With the object of showing the most suitable periods for planting different varieties, a planting calendar has been prepared. In this calendar the standard type varieties, as being representative of others of the same class, are shown. The wheat belt has been divided into early, mid-season, and late zones, in order to provide for the variations in length of season which occur throughout the wheat belt, and which have a strong relation to the average annual rainfall.

The early zone is the most easterly and is that in which the annual rainfall ranges from 10 to 15 inches.

The mid-season zone is that in which the rainfall is from 15 to 20 inches.

The late zone is that with a rainfall of over 20 inches.

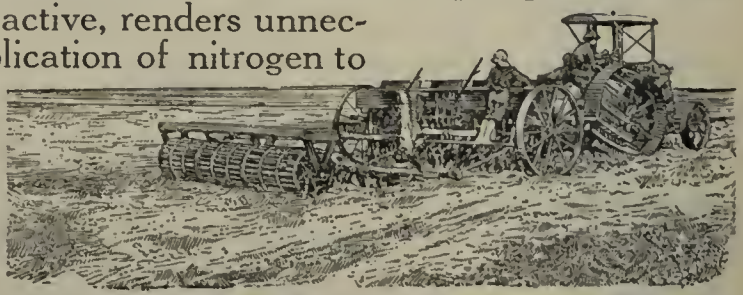
The planting calendar is :—

Varieties.	Early Zone.	Mid-season Zone.	Late Zone.
Late Varieties :			
Yandilla King	1st April to 21st April	1st April to 7th May	1st April to 21st May
Mid-season Varieties :			
Baroota Wonder Early (for hay)	1st April to 21st April	1st April to 7th May	1st April to 21st May
Nabawa	21st April to 14th May	21st April to 21st May	7th May to 30th May
Early Varieties :			
Gluyas Early	7th May to 30th May	14th May to 30th May	14th May to 21st June
Carrabin			
Very Early Varieties :			
Noongaar	21st May to 30th May	14th May to 30th May	14th May to 21st June

The amount of seed used ranges from 30 lbs. per acre in the most easterly part of the wheat belt to 60 lbs. on the western and wetter boundary. There is very considerable latitude as to the amount of seed which can be sown without materially affecting the yield, as demonstrated very emphatically by the experiments conducted during the past 14 years at the Merredin and Chapman Farms. The average results at the Merredin Experiment Farm, which may be said to represent the early zone, for the seasons 1915 to 1927, are :

Rate per Acre.	With a Sparse Stooling Variety.					With a Free Stooling Variety.				
	Hay.			Grain.		Hay.			Grain.	
	Tons.	cwt.	qrs.	Bus.	lbs.	Tons.	cwt.	qrs.	Bus.	lbs.
30 lbs.	2	1	1	20	8	2	1	1	20	56
45 lbs.	2	3	0	20	32	2	3	2	22	0
60 lbs.	2	1	1	20	8	2	3	3	22	8

The effect of fallowing fertile soil is to make available an abundance of nitrogen for crop needs and this, combined with the warm weather in spring time when nitrification is active, renders unnecessary the application of nitrogen to wheat crops. Experiments to date have also indicated that no benefits are derived from applying fertilisers containing potash. On the other hand there is definite evidence of phosphorus deficiency in the wheat soils, and the application of a phosphatic fertiliser is essential. Superphosphate has proved the most suitable form of phosphatic fertiliser, and the invariable practice in Western Australia is to apply a dressing of superphosphate,

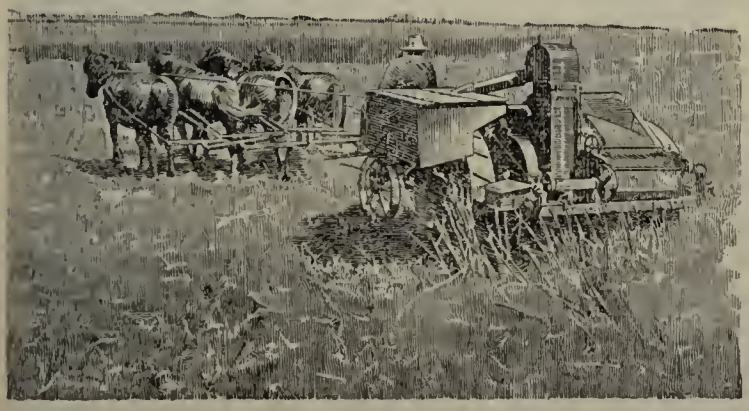


Seeding: Triple Operation—Drilling, Harrowing and Rolling.

by means of the seed and fertiliser drill, when planting the seed. The custom has been to apply from 75 to 100 lbs. per acre, but there is a very general tendency to increase the amount, particularly on the less fertile lands, though the lesser quantities supply far more phosphorus than the crop removes from the soil. The effect of applying varying amounts of superphosphate to the crop on the heath-like lands (" sand plain ") at the Wongan Hills Demonstration Farm has been :

Rate of Super.	1925. Average Yield.		1926. Average Yield.		1927. Average Yield.		1928. Average Yield.		Percentage Yield. 1925-28.
	Bus.	lbs.	Bus.	lbs.	Bus.	lbs.	Bus.	lbs.	%
150 lbs.	19	44	16	40	16	53	26	24	140
75 lbs.	15	12	11	20	14	57	15	20	100
225 lbs.	17	52	18	48	16	52	30	30	141

After planting no further attention is given to the soil or crop until harvest time. This commences in spring, October (rarely in September), when the hay necessary for the working horses and for other stock is mown. For this purpose portion of the wheat crop—but now quite frequently a specially planted oat crop—is utilised. The practice of growing oats for hay is increasing, as it provides a change crop for the land and assists to control soil-borne diseases. Oaten hay, moreover, is in great favour for supplementing the pasturage for sheep when such is scanty. For hay-making wheat and oats are best cut when in " flower," as the crop then contains the maximum amount



Harvesting with Combined Harvester.

of nutritive qualities, and the feeding material is evenly distributed throughout the whole plant. The stage of maturity recommended for cutting the oat crop has been regarded by many as being too early for some of the old varieties, but experience has shown that oats, and particularly the newer varieties, can be cut at this time with great advantage.

For harvesting the hay crop the reaper and binder has superseded all other implements. The sheaves, after being cut with the reaper and binder, are placed without delay in heaps known as "stooks." Sufficient men are employed "stooking" to keep up with the reaping machine. The sheaves are allowed to remain in "stooks" usually for 10 to 14 days until the hay has matured, *i.e.*, so dry that it will not heat or mould when placed in the stack. Sometimes the hay is stacked in a shed, but the more common practice is for it to be stacked in the paddock where grown, or in one near the buildings and left until required.

Bags ready for sewing.

The long hay is usually cut or chaffed into short lengths before being fed to stock. The climate makes hay-making exceedingly easy, and tends to produce a bright coloured nutritious hay. The average yield is about one ton of cured hay per acre, but yields of two tons per acre are not uncommon on fallowed forest land. The ordinary sized reaper and binder is drawn by three horses and requires one driver, who on an average cuts 8 to 10 acres per day. In light crops it requires one man to stook after the machine; in crops yielding from 1½ tons to 2 tons per acre, two men are needed.

The portion of the crop intended for grain is almost invariably harvested with the stripper-harvester or reaper-thrasher. The stripper-harvester is purely an Australian invention and is a machine which is drawn by horses or

a tractor. The machine is so "drafted" that the horses or tractor travel in the stubble of the harvested portion and do not interfere with the crop. The number of horses required ranges from 4 to 8, and is dependent upon the width of the machine, which varies from 5ft. to 10ft. The latest machines are now propelled by self-contained motive power. By means of a comb the ripe ears of wheat coming within reach of the machine are gathered and directed to the cutting plate, where the beater drum cuts or strips them from the straw and thrashes the grain out. Built in as part of the machine is a winnowing attachment, on to which the thrashed but "undressed" grain is delivered as the implement is drawn through the crop, then winnowed and delivered into a bin with a capacity of 10 to 15 bushels at the side of the machine. When the bin is full, the wheat is transferred into bags. The reaper-thrasher is a similar implement for harvesting and cleaning the ripe grain from the stalks, but, as its name implies, it reaps the heads with portion of the straw and delivers them to thrashing and winnowing attachments.

A harvester, 10ft. wide and with a team of six or eight horses, will deal with about 70 acres per week.

Most farmers cart their own wheat from the farm to the nearest railway siding or flour mill. Some, however, have their produce carted by contract teams or motor trucks at rates usually approximating 1s. per ton per mile. This latter practice is becoming more popular.

There is considerable competition for the bagged wheat amongst agents of the wheat merchants. It is purchased at bushel rates on what is known as the f.a.q. (fair average quality) basis. Wheat which is equal to this standard is bought at British market rates, less transport and handling charges—about 20d. per bushel—when ocean freight is 40s. per ton. Wheat below this standard is purchased at a reduced rate based upon its quality. The amount of the reduction is known as "dockage."

The average wheat yield for the State in the 1927-28 season was 12.13 bushels per acre. Compared with that of European countries this is low. As the result of standardised and more intensive methods the average is on the up grade. The comparatively low yield is offset by the

production per man, which is probably as high as in any other country. The unit, or one man, farm is expected to produce at least 1,200 bags, or 3,600 bushels of wheat per year, and some farmers produce considerably more. This is possible only by the use of large teams—six, eight, or more horses, and large implements specially designed to suit local conditions, climate, and soil. The economics of the position demand the cultivation of maximum areas with a minimum of labour, and this has stimulated Australian engineers to design and supply the implements necessary. As a result, the farmer in Western Australia has available many large labour-saving implements to enable him to put in and take off his crops. Amongst these are the universal stump-jump cultivating implements which render it possible to crop partially, and cheaply, cleared land in which the roots and short stumps still remain.

The implements used on a wheat farm, the horse power required to draw them, and the average amount of work performed by one man with such implements under normal circumstances are :—

Implement.	Horses.	Acres per week.
Cultivating Plough—14-disc (3in. to 4in. deep)	8-10	70-75
Do. do. 10-disc	6-8	50-60
Mouldboard Plough—5-furrow, heavy	7-8	36
Do. do. 4 do.	6	30
Spring-tyne Cultivator	4	90-100
Do. do.	6	120-130
Harrows— 6-leaf	6	240
Do. 10-leaf	10	400
Drill—15-tube	4	90-100
Do. 20-tube	6	120-130
Combine Cultivator-Drill—16-tube	6	90-100
Do. do. 20-tube	8	120-130
Binder—6ft.	3	50
Do. 8ft.	4	70
Harvester—6ft.	4-5	40
Do. 8ft.	6	50
Do. 10ft.	6-8	70
Header—8ft.	6-8	50

It is impossible to state the actual cost of producing the wheat crop, as this varies so much according to the methods adopted by different farmers and the efficiency of the administration. In order, however, to give some idea of cost the ruling contract charges which may be made for various operations are set down. They will vary slightly in different districts according to the class of soil, the labour available, and other conditions :—

	Per acre.
Ploughing with mouldboard, 4in. deep	7s. 6d.
Ploughing with cultivating plough, from	5s.
Two cultivations with spring-tyne	3s. each.
Drilling with disc drill	3s.
Drilling with combine cultivator drill	4s.
Harvesting	7s. to 7s. 6d.
Reaping and binding	7s. 6d.

To these labour costs there must be added :—

Cost of seed wheat, ¾ bushel, at 5s. per bushel.

Cost of superphosphate, 1 cwt. or more, on the farm at 6s. per cwt. per acre; and bags, twine, etc. (bags usually cost about 12s. per dozen).

Wheat Test Plots, State Experiment Farm.

In addition to cheap land, and liberal financial assistance, the settler with, or without, experience has at his call the service of the Agricultural Department, whose officers

assist by advice and in any other way possible. There are also seven State farms, where experiments are conducted in order to solve some of the many problems which concern the agriculturist in new countries, and the results of which are so valuable in enabling him to definitely establish a practice which will give him the best returns. Visitors are welcomed, and the experience of the managers is entirely at their disposal.

As the result of the work done at the experiment farms, cultural practice has been gradually changed, *e.g.*, the average amount of seed sown per acre has been reduced; the quantity of fertiliser used per acre has been increased, and the date of sowing the main crop has become later—this latter largely as the result of the elimination of certain varieties of wheat in favour of earlier maturing kinds.

A very important part of the work at these experiment farms is the production of pure seed wheat and oats of the standard varieties for sale to farmers. This is carried out on the most modern lines, and the settler is able to obtain seed grain true to name, free from impurities, and of a quality in which the ability to yield well has been maintained at the highest standard.

"Burt's Early" Oats.

Another function of the experiment farms is the production and introduction of new varieties of cereals, particularly of wheat. One of the varieties of wheat produced, "Nabawa," has become the most popular wheat in the State, and to-day more than 50 per cent. of the area cropped is sown with this variety. "Nabawa," in addition to being prolific, has up to date proved rust resistant, and also resistant to flag smut.

The latest wheat production is a specially early variety for the districts on the eastern fringe of the wheat belt. It is named "Noongaar," and is probably the earliest variety in cultivation. An instance of the introduction of plants is that of "Burt's Early" oats, which has practically superseded all other varieties in the early portion of the wheat belt.

That wheat growing has proved remunerative is shown by the comfortable homesteads and thriving financial position of innumerable families in the wheat belt. A very gratifying feature of this prosperity is that hard working, steady and intelligent men have succeeded, even when handicapped by inexperience and lack of capital other than that furnished by the Agricultural Bank. The settler who has some capital and some experience will make more rapid progress, and has to face an easier task.

Though wheat is the staple crop, other cereals are readily grown. The growing period is the winter and spring. It compares with the late spring and summer of the southern portions of England, and most of the crops suitable for those conditions can be grown in the wheat belt. The varieties chosen must, however, be quick maturing, for the season is forcing and short. For instance, only early varieties of oats can be grown with any satisfaction, and the grain is "thin." The fodder barleys like "Cape" do better than the malting ones like "Chevalier." Early maturing peas grow well, but the late maturing vetches are too late; rape matures in one season instead of in two as in Europe.

The wheat belt is so suitable for sheep, either for the production of wool or for the raising of fat lambs, that sheep husbandry is an essential feature of wheat farming. The sheep act as weed scavengers and turn into money material which otherwise would be wasted, and in so doing save the expenditure entailed in the control of weed growth by the use of cultivating implements. When the farmer's object is wool, merino sheep are almost invariably kept; when fat lambs are raised the best results are obtained when a cross-bred ewe—produced by mating one of the British long wools with the merino—is mated with one of the Downs' breeds.

One reason for the success achieved is that agriculture in the wheat belt is, in its fundamentals, very simple. Further, there is now available a mass of information so that the new-comer can be given very definite advice regarding the most suitable varieties and other cropping details. The wheat grower's labour year is as follows :—

June, July, and August	Fallowing.
September and October	Cultivating the fallowed land.
October	Hay harvest.
November, December, and January	Grain harvest.
January and February	Wheat carting.
March	Miscellaneous work.
April and May	Final cultivation of seed bed and sowing seed.

Quite a number of farmers obtain a considerably higher yield than the State average. In the crop competitions in 1928, in which the area judged was a plot of 50 acres, 100 farmers entered. The average yield was 26.9 bushels per acre compared with 24.5

Wheat Belt Fodder Crop—Lupins.

bushels per acre the previous year. The farmers obtaining these results are amongst the best in the State, but they are influencing the more general adoption of

better methods, and there is every reason to expect that farmers following their lead will obtain at least an average of 18 bushels on forest land and 15 bushels on lighter land.

Another competition (Wheat Yields Competition) was held, in which the whole of the grain crops on the competing farms were judged. This competition was carried on for three years. During that period the competitors planted 22,805 acres, their average yield was 18 bushels 4 lbs. per acre, or 6 bushels 43 lbs. above the average for the State over the same period. The yearly average yields for all the zones were :—

1924 (zones 1 and 2 only)			....	....	21	bus.	1	lbs.
1925	,,	,,	....	....	....	17	,,	43	,,
1926	,,	,,	....	....	....	16	,,	18	,,

The highest individual yield was 26 bushels 56 lbs. from 199 acres, with a rainfall of 801 points during the growing period. The highest average yield over the three years was 24 bushels 17 lbs. from a total area of 736 acres. All the final competitors, except one who had the misfortune to lose his crop by hail, averaged 20 bushels or over.

And what of the future? It is dangerous to prophesy, but not half the land suitable for cultivation is yet under crop, and the stimulus given by success is attracting new settlers much more rapidly than they can be accommodated. The annual value of the wheat crop already exceeds that of the gold yield in its peak year of production. In 1927-28 the yield passed the 35,000,000 bushel mark, and in this, the centenary year, the aim is to plant an area sufficient to yield 50,000,000 bushels. Year by year this may be increased, even beyond 100,000,000 bushels per annum: a yield well within the capacity of the wheat lands of the State.

XVIII: DAIRYING: A LONG RETARDED INDUSTRY.

RTIFICIAL pastures, in many countries, are the foundation of the dairying industry. Nature provides the soil and the moisture; it is left to man to introduce the appropriate vegetation. England imported her clovers from Holland nearly three hundred years ago. Without them her population could never have reached its present numbers. For ninety years Western Australia neglected its opportunities in this regard, and at the end of that period there were only 14,650 acres of artificially laid down pastures. In the last ten years this has been increased more than tenfold, the area at the end of 1928 being about 170,000 acres. In like ratio the butter production of the State, since the commencement of the great war, has increased tenfold.

The first settlers brought with them numbers of dairy cattle, and at the end of 1829 there were more than 200 cattle in the State. Some of these were of the highest quality. Mr. Bull, "a substantial English farmer of the olden time," whose property was on the Helena River, not far from Henley Park, soon had a numerous herd, including some of the finest cows in the Colony, brought direct from Woburn: the historic seat of the Dukes of Bedford. A hundred years ago, as to-day, the fame of Woburn Park was world-wide, and the cattle bred there were amongst the best in England. Of other English breeds, imported during the first two or three years of the settlement's existence, were Devons, Shorthorns, or Durham, Alderney, and Ayrshire.

As with other industries, the absence of a market for anything beyond what could be consumed locally confined dairying within modest limits, and when the rush of population came in the early nineties, importation from

the Eastern Colonies was the only means of meeting the needs of the people. The goldfields absorbed all surplus labour, and as these declined attention was devoted to the development of the wheat areas and pastoral country. In 1914 Western Australia was producing only 451,000 lbs. of butter and practically no cheese. Far more than a thousand pounds sterling was sent out of the State every day to supply these two commodities. Progress has been made only during very recent years as a result of a vigorous policy of land settlement in the South-West.

The chief factors have been the introduction of clovers and the demonstration by the Department of Agriculture of the value of top-dressing with phosphatic fertilisers. Experiments on sixty-five plots over a period of five years have shown that with the application of one cwt. of superphosphates per acre per annum an average increased yield of 263 per cent. can be obtained. This practice is rapidly becoming general, and butter production is increasing accordingly. Even now the industry is but in its infancy, and dairy importations still cost the people of the State over a million pounds annually. There is in the South-West an enormous area of land suitable to the establishment of pastures, and all the natural conditions are there for the building up of an industry far beyond local requirements. That division of the State may yet rival the northern rivers district of New South Wales as an exporter of dairy products.

For 1928 the butter yield was 4,500,000 lbs., and it is expected that this year will see an increase of approximately a million pounds. The South-West dairy company, which, ten years ago, had a turnover of £11,000, last year had a turnover of £145,000. Soldier settlement and group settlement in the South-West are bringing results. At Manjimup two and a half years ago the dairying activities were confined to the despatch of a few cans of cream to a butter factory sixty miles away; now nearly ten tons of butter is made in the district weekly. At the Margaret River, near Cape Leeuwin, a year ago 18 cans of cream were being sent weekly to the factory at Busselton; to-day 180 cans weekly are despatched. Equally rapid growth is shown in many other centres.

With increased output there is also improvement in quality. During last season approximately 7,000 boxes of local butter were graded in Perth, of which 87 per cent. scored 92 points and over (equal to "Kangaroo" brand export quality), 10 per cent. was first grade with 91 points, and only 3 per cent. second grade: below 90 points.

In the development of the dairying industry it has been the endeavour of the advisers of the Government to build on sound lines, taking the examples of the dairying world as a guide. Recognising that herd improvement was essential to success, the Department of Agriculture launched a scheme for the use only of registered pure dairy sires, ex officially tested dams with production above standard, and for their exclusive use in large zones or districts, thus providing for a continuity of policy in "grading up" the ordinary herds. This policy has been in vogue some 4½ years, and to date the Government has distributed approximately 400 bulls, all strictly within the zones according to the breed, to settlers who are being financed by the Government in the development of their holdings.

The policy of zone-breeding does not interfere with the private dairy farmers, but they are falling into line with the mass herd improvement policy and are accepting the zone breed of bull as their herd sire.

Parallel with the policy of zone-breeding is legislation requiring the registration of all bulls over the age of nine months, giving the Minister for Agriculture the power to refuse registration in the case of bulls which are undesirable. The work this Act has done in the elimination of scrub bulls is shown by the reduction of 925 undesirable mongrel bulls. Pure bulls ex officially tested dams with production above standard, in use in the dairying districts of the State, have reached the proportion of 56 per cent.

That several districts in Western Australia are eminently suitable for dairy cattle is exemplified by the results obtained from cows under official test. A young Jersey cow produced 902 lbs. of butter in twelve months, which is the highest production for a senior 3-year old Jersey cow in Australia. A Guernsey cow, under official test, produced 1,048 lbs. of butter, being the third highest producing

Guernsey cow in Australia. Animals bred in this State secured champion ribbons in the dairy breeds at the Melbourne and Sydney shows.

It is the policy of the Government to afford instruction and advice gratis to dairy farmers, and for this purpose expert officers are stationed in the different districts and provided with motor cars in order that they may visit dairymen periodically. At the State farms, and on farmers' holdings, experiments and demonstrations are conducted by field officers in order to introduce improved practices and to prove the value of new fodder plants. Dairy science course classes are held for those engaged in the manufacturing side of the industry. Bulletins and leaflets on dairying subjects are distributed without charge, and lectures, illustrated with lantern slides, are given by competent experts in different centres from time to time.

XIX: FRUIT CULTIVATION.

RUIT TREES of many kinds were brought to Western Australia by the earliest settlers, and throughout the South-Western division there are vines, fig, mulberry, olive, and pear trees of great age. The heavy and immediate burdens of the day, combined with the limited market for fruit, precluded anything in the way of extensive and systematic orchard cultivation, but in their third annual report—issued in 1834—the Directors of the Agricultural Society of Western Australia said:

> We have now growing in the Colony plants of nearly every kind of European fruit tree and shrub, all of which appear to thrive well, as do such of the tropical fruits as have had a fair trial—as the date and the banana. Of figs and vines the fruit appears to be as good as that grown in any part of the world. Of the vine, one settler has half an acre planted. Indeed this and other fruit trees and plants are becoming very generally cultivated throughout the settlement, especially the fig, vine, and peach, which here grow to a certainty from cuttings. The olive, although regular plantations have not been made, grows remarkably fast, and there is one plant at Perth now in fruit.

It is possible that the banana referred to was really the plantain, which flourishes about Perth and in other parts of the State. Sir Richard Spencer, the Government Resident at Albany, brought with him in 1833, from his home at Lyme Regis, a Malta blood orange tree, grapes, oranges, currants, raspberries, and gooseberries. In a letter written to a friend in England in 1837 he refers to a further consignment of fruit trees that had been sent to him, and asks that early in the winter there might be forwarded "twelve to twenty grafted standard apple trees grafted about four feet from the ground for an orchard so that cattle may graze under them."

The earliest tabulated record of commercial fruit cultivation is in 1848, when there were 114 acres under vines and ten acres under olives, the quantity under general

fruit being too small, or too scattered, for enumeration. For the first sixty years of the Colony's existence there was little encouragement to attempt to do more than grow the small amount of fruit required locally.

With the inrush of population in the early nineties a demand was created far beyond the then possibilities of supply, and it was rashly assumed that for all time the

Orchard: Kalamunda.

Colony would be dependent on the old established orchards and vineyards of the east. Prohibitions imposed against the importation of apples from localities where codlin moth was prevalent were vehemently attacked, on the ground that they unduly restricted the people's supply of fruit in the interests of an industry never likely to be of great importance.

As recently as 1896 the total area of the orchards was only 2,393 acres and of the vineyards 2,294 acres: to-day there are 18,393 acres of orchards and 41,959 acres under

vines. The first export of fruit was in 1903—a small trial shipment of nine centals valued at £15—but before the war a regular, though small, export trade had been developed, the shipments for the 1914 season totalling 33,851 centals, of the value of £46,417. As with other forms of production, the war caused a break of five years.

The distance from the north to the south of Australia is about equal to that between Edinburgh and Algiers. The consequence is an infinite variety of soil, climate, and rainfall. This makes possible the cultivation in Western Australia of almost every known variety of fruit: the chief exceptions being a few of the purely tropical kinds such

Vine Trellis at Belhus, a quarter of a mile long.

as the mangosteen and the durian. The possibilities of tropical and semi-tropical cultivation in the North-West and the Kimberleys have not yet been adequately tested. Though up to the present banana growing has not been carried on with commercial success, there would seem

to be no good reason why it should not be practised in certain of the northern districts with results equal to those obtained in Queensland. At present the local consumption —greatly restricted by excessive price—is drawn chiefly from Java, the imports carrying an annual impost in Customs duty of something like £15,000. Pineapples and cocoanuts are grown on the mission stations in the Kimberleys, but not in export quantities.

In the midlands, about Perth, and in the eastern districts a great variety of fruit is produced; vines both for the table and for wine making flourish, their growth and the quality of the fruit produced being unexcelled anywhere in the world. The vineyard at Belhus, illustrated in this article,

An Orchard Scene.

has been declared by travellers to be the finest in the southern hemisphere, and the grapes exported—notwithstanding the difficulties associated with the long ocean voyage—are amongst the best that reach the London market. Peaches, oranges, lemons, figs, apricots, nectarines,

plums, loquats, apples, and pears all do extremely well in this portion of the State, and the now thoroughly tested soils of the Darling Range offer wide opportunities for fruit culture.

Further south, apples are produced to perfection and in rapidly increasing quantities. For several years past West Australian apples have brought a better price on the London market than those from any other State in the Commonwealth, and the area of good orchard land in the South-West covers millions of acres. All kinds of typical English fruits and berries are successfully grown in this division, as well as walnuts.

Giant Pear Tree.

As compared with the other States of the Commonwealth Western Australia made a late start in the growing of fruit on a commercial scale, and the effect is illustrated in the kinds of fruit planted. Both soil and climate are eminently

fitted for the production of fruits for jam making and canning, but these avenues have not yet been exploited, attention being devoted to varieties meeting the demand for fresh fruit within the State and suitable for export of surplus production, with the result that 76 per cent. of the total area under orchards is devoted to apples, oranges, and pears. Apples account for 10,044 acres, or 54 per cent., oranges 2,941 acres, or 16 per cent., and pears 1,135 acres or 6 per cent.

High protection against the outside world, and free trade within Australia, have not assisted the establishment of jam making and canning factories in Western Australia. So far they have made no headway against the old established industries of the Eastern States. With increased production of suitable fruits and a growing local consumption there can be no doubt that these establishments will come before long, to the great benefit of the fruit growers generally, who now suffer a distinct disability in the matter of disposing of surplus fruits of varieties not suitable for export.

In the meantime, by the exercise of much foresight and care, growers are steadily expanding their export market—particularly in apples. The situation is most favourable. Australian apples arrive on the London market when the crops of the northern hemisphere have been consumed. Unlike the Canadian, they have not to face the fierce competition of the enormous American export. New Zealand, South Africa, and the Argentine are competitors, but their exports are almost trifling compared with those that pour into England from America during the English winter. Summer, too, is just the time the English people want apples, and the market there is capable of great expansion, providing quality is maintained and the cost of production is low enough to

Currant Drying.

permit a fair profit at reasonable prices. Whilst Australia generally is favoured in the matter of season, Western Australia has a distinct advantage over the other States in being nearer to the market. A later start, also, has made it easier to concentrate on the most suitable varieties, such as Cleopatra, Dunn's, Jonathan, and Granny Smith. In soil, climate, rainfall, and cost of production the State's orchard lands are unrivalled in Australia.

So far the peak year of production was 1927, when 1,500,000 bushels of fruit (exclusive of grapes) was grown. In 1928 the apple crop was much smaller, but for this Centenary year a record production all round is expected, and the apple crop may exceed the million bushel mark for the first time. In 1927, 526,000 cases of fruit went to home markets, and 53,000 cases to the Eastern States. This year's figures should be much larger.

The production of the vineyards has shown a steady increase from year to year and the yield for 1928 comprised: 2,641 tons of table grapes, 2,031 tons of dried fruits, and 408,717 gallons of wine. From the point of view of Australian tariff policy the dried fruits and wine industries are at present getting the "worst of both worlds," but the difficulties are not insuperable, and the quality of the products will win out in the end. The first consignment of West Australian wine has been recently placed upon the London market.

The orchards and vineyards of the State are not free from insect pests and fungus diseases, but some of those most feared—and causing the heaviest losses and the greatest expense to fight in other countries—are happily absent, including codlin moth and phylloxera amongst the insect pests and apple scab (*Venturia inequalis*) amongst the fungi.

XX: FINANCING THE FARMER.

THE absence of any system of rural credit retarded agricultural development during the first sixty years of the Colony's settlement. It was a defect recognised and commented upon by the earliest settlers, but nothing was done to remedy it until the Colony obtained complete self-government. The late Hon. George Throssell, the late Mr. William Paterson, and the Hon. A. R. Richardson, I.S.O., were foremost amongst those who urged upon the first Premier (Sir John Forrest) the necessity of forming a State bank to finance settlers with limited capital. In August, 1894, Forrest introduced the Agricultural Bank Act, Parliament accepted it, and it received the Royal Assent three months later.

Under the management of Mr. William Paterson the Bank commenced operations early in 1895 with the modest capital of £100,000 raised from the State Savings Bank on the security of four per cent. mortgage bonds. Loans were made only for clearing, cultivating and ringbarking, and were limited to 50 per cent. of the value of the improvements, and to a total of £400 in any individual case. Interest was charged at five per cent. and the loan was secured by a first mortgage on the land. The loans had a currency of thirty years, interest only being payable for the first five years, and principal and interest over the remaining twenty-five years in half-yearly payments.

The advantages of the Bank were quickly appreciated, and in the second year of its operations it was found necessary to increase the maximum advance to an individual farmer to £800 and to liberalise the conditions to a two-thirds value basis on the improvements effected. Fencing, buildings, reservoirs, and draining were added to the purposes for which advances could be made. In 1902 the maximum was further advanced to £1,000, arrangements

were made for the extension of the privileges of the Bank to those engaged in horticultural and viticultural pursuits, and the discharge of liabilities on settlers' holdings was included in the purposes for which advances might be made. These widenings of the Bank's utility necessitated increases in its capital from time to time until in 1906 it stood at £1,000,000.

In that year, with the State still producing less than its own requirements of wheat, Mr. (afterwards Sir) James Mitchell, as Minister for Agriculture in the Government led by Sir Newton Moore, caused a general stocktaking to be made of the progress of agricultural development, with the result that a speeding up was decided upon. The Bank was authorised to make advances up to £100 for stock for breeding purposes, and for improvements on the basis of the full value up to £300 and half value for a further £250. Advances for the discharge of liabilities might be made up to 75 per cent. of the value of existing improvements. At the same time the Bank became a body corporate, and was placed under the control of a managing trustee and two other trustees.

The increase in the advances for improvements up to the full value of the work done was the boldest step of its kind that had been taken by the Government of any country. Its effect was to enable men entirely without capital to start as farmers on their own account. Its justification lies in the fact that by far the greater portion of the State's wheat crop of recent years has been grown by men who could not have taken up land at all without this provision. No other single factor has contributed so largely to the development of the wheat belt, nor is equally calculated to stimulate its future progress.

Further increases in capital have become necessary from time to time, until now the capital of the Bank stands at £5,500,000. Since 1911-12 the money has been provided out of the general loan fund of the State, and the capital borrowed for the Bank prior to that date has been converted into local inscribed stock. Until 1912 the rate of interest charged to settlers remained at 5 per cent., but in that year the rate—for purposes other than improvement—was increased to 6 per cent. In 1917 dearer money

necessitated a further increase to 7 per cent., but the trustees are restricted to a charge of not more than 1 per cent. in excess of the cost of the money.

In 1909 the maximum advance on the full value basis was increased to £400, and advances were also authorised for the purchase of machinery, and in 1911-12 the total amount that might be loaned to one settler was increased to £2,000. The schedule of purposes for which advances could be made was enlarged to cover any industry which the Governor might declare to be a rural industry, and for any purpose incidental thereto, including the erection of a dwelling house. By proclamation issued on the 4th of July, 1917, the manufacture of butter and bacon was declared to be a rural industry, and advances totalling £23,417 were made to six factories, materially assisting them over a most difficult period.

In 1914 the State experienced its first—and, to date, only drought in the wheat areas. Farmers who had strained their financial resources to the uttermost in the development of their holdings were unable to meet their obligations, and their plight quickly reacted upon the trading community, already suffering the stringency of war conditions. The Labour Government, led by Mr. John Scaddan, immediately introduced emergency legislation whereby a special authority, known as the Industries Assistance Board, was set up to give the necessary relief and enable settlers to put in the 1915 crop. About 2,350 settlers received full cropping assistance and 800 partial assistance. Heavy enlistments for war services aggravated the position, and numbers of the settlers found themselves unable to discharge their liabilities as quickly as had been expected, some 835 being still indebted to the Board. Since 1916 the Board's operations have been administered by the Agricultural Bank.

In 1917-18 the provisions of the Industries Assistance Act were made available to returned soldiers to enable them to finance cropping operations. 1,500 availed themselves of this help, of whom some 900 are still on the books. The Industries Assistance Board has functioned somewhat on the lines of an Official Assignee: it has financed the farming operations of its clients, collected the farm revenue

and, after recouping its advances, distributed the surplus amongst its creditors. The total amount of advances made by the board is £12,086,603, of which £10,676,402 has been repaid.

Under the Discharged Soldiers Settlement Act of 1919 the Agricultural Bank was empowered to make advances to returned soldiers on the recommendation of the Discharged Soldiers' Land Settlement Board, and in accordance with the general provisions of the Bank's Act. The Bank organisation was also made available for the purposes of the Board. Advances totalling £5,816,244 were made by the Bank to 5,213 returned soldiers. In order to settle returned men as quickly as possible it was found desirable, in some cases, to help them to acquire farms partly improved and in December, 1922, the individual limit of advances was increased in the case of soldier settlers to £2,500.

In 1922, also, the terms of repayment of loans for improvements were liberalised by extending the period during which interest only is payable from five years to ten. Principal instalments were made to fall due for payment in the eleventh year, calculated at 2s. 6d. per cent. of the amount advanced, and increasing by a like amount in each half year. Interest at current rates is charged on overdue interest.

In 1906, when the great forward movement was made in the liberalising of the conditions of advances, the staff of the Bank numbered only five, including the manager. At the end of 1928 it had grown to 235, including 75 field inspectors. In 1916 branch offices were opened in Northam, Bunbury, Geraldton, Katanning, Narrogin, Kellerberrin, Bruce Rock, and Kununoppin. Each office is in charge of a district inspector, and exercises close supervision over its clients' operations. Its field inspectors are trained men who render much valuable advice and assistance—particularly to less experienced settlers.

The conspicuous success of the institution is due in no small measure to the wisdom and enthusiasm displayed by those who have had the immediate control of its affairs. The first managing trustee, Mr. William Paterson, held the office until his death in 1920. He had assisted in passing

the legislation that brought the institution into being, and for a quarter of a century he guided its destinies with a sure hand, bringing to his task ripe practical knowledge of farming, unusual business capacity, and keen knowledge of human nature. Many an independent agriculturist of to-day attributes his position to the sound advice sympathetically given by Mr. Paterson. On his death he was succeeded by Mr. E. A. McLarty—previously deputy managing trustee—who is still in office. Another of those who collaborated with Sir John Forrest in the passing of the Agricultural Bank Act, and who for many years aided in the development of the institution, was the Hon. A. R. Richardson, I.S.O., who was one of the first trustees and held office from 1906 to 1923, when he retired generally from business pursuits. The present deputy managing trustee is Mr. William Grogan, and the trustees are Messrs F. V. Cooke, appointed in 1908, and Mr. C. J. Moran, appointed in 1923.

The influence that the Agricultural Bank and the Industries Assistance Board have had on the development of agricultural lands and the increase in production, is indicated by the accompanying table :—

Year.	Agricultural Bank.			Total Cleared Area, including ringbarking and partially cleared.	Cleared Area, including ringbarking and partially cleared from Bank and Soldier Settlement advances.	Annual Wheat Production.
	Authorised Capital.	Ordinary. Total Progressive Advances.	Soldier Settlement. Progressive Advances.			
	£	£	£	£	£	Bushels.
1895 ..	100,000	..	..	218,239	Not recorded	188,077
1904 ..	500,000	215,000	..	1,924,646	207,554	2,013,237
1913 ..	4,000,000	2,582,937	..	6,714,585	2,880,956	13,331,350
1921 ..	4,500,000	4,069,923	3,055,437	7,583,272	4,451,801	13,904,721
1928 ..	5,500,000	6,649,386	5,815,244	11,486,803	6,583,540	34,500,000
		£12,465,630				

XXI: THE PROGRESS OF LAND SETTLEMENT.

THE generous conditions of land settlement prescribed in the regulations issued by the British Government before the "Parmelia" left London, remained in force for less than three years, and during that time over one and a quarter million acres were allotted. In 1832, when the price of land was fixed at 5s. per acre, it was found that some of those who had acquired holdings under the earlier terms were prepared to sell at 3s., and selection from the Crown declined. In 1840, when the price was increased to 12s. and subsequently to £1 per acre, sales practically ceased, and during the period 1840 to 1844 the total sales of Crown lands did not realise £5.

Under the first land settlement regulations issued on the 28th of August, 1829, land in conformity with the conditions published before the settlers left England was allotted on September 29 to R. H. Bland, 8,000 acres; Peter Brown (Colonial Secretary), 5,000 acres; Charles Boyd, 640 acres; W. T. Dance, Captain of the "Sulphur," 5,000 acres; William Dixon, 2,268 acres; Sir James Hume, 2,666 acres; George Leake, 14,887 acres; Colonel P. A. Latour, 10,000 acres; Dr. John Whattley, 1,500 acres; John Septimus Roe, 3,100 acres; Lionel Samson, 4,696 acres; and Charles Ridley, 1,750 acres. All these grants were close to the Swan River, many of them with river frontages. Other grants made before the close of the year were: C. H. Fremantle (Captain of the "Challenger"), 5,000 acres in the interior; Thomas Bannister, 2,000 acres on the Canning River; Henry Camfield, 1,000 acres on the Swan; M. C. Carew, 100 acres on the Helena; John A. Dutton, 3,600 on the Canning; P. H. Dod, 2,000 on the Swan; John O. Davis, 7,026 on the Canning; R. Dawson, 1,280 on the Canning; James Drummond, 1,000 on the Swan and 100 on the Helena;

Joshua Gregory, 1,000 on the Swan; John Hobbs, 4,000 on the Canning; William Lamb, 8,119 on the Swan; Colonel Latour, 100 on the Helena; R. Wardell, 1,000 on the Swan; Daniel Scott, 4,000 on the Swan; William K. Shenton, 100 on the Helena; W. H. Mackie and F. C. Irwin, 200 on the Swan; and P. Rodgers, 4,000 on the Canning. These grants, with an original grant of 100,000 acres to Captain Stirling (original located in the neighbourhood of Port Vasse (Wonnerup Inlet), but subsequently transferred to include Garden Island and other locations), and 250,000 acres conditional granted to Thomas Peel—who arrived with his immigrants about the middle of December—(originally located along the southern bank of the Swan River from the present site of Pt. Walter almost to Guildford and extending south beyond Rockingham, but altered to an area on the north of Peel Inlet and on the northern bank of the Murray River, extending north to Rockingham) made the total area of land granted in the year 1829 525,000 acres.

In 1848 the regulations were amended to permit of the issue of licenses for pastoral purposes, and considerable areas were taken up. By 1863, when the north-west pastoral areas were first exploited, the area under license was 8,000,000 acres, and in the succeeding sixteen years it increased to 37,000,000 acres. With the opening of the Kimberleys in the early eighties the area quickly expanded to 161,000,000 acres.

In striking contrast was the slow progress of agricultural settlement. Sparsity of population, and the fear of overloading the local market whilst facilities of transport were absent, combined with unacceptable conditions for the sale of Crown land, and scarcity of labour, kept production back. Forty years after the establishment of the Colony the total acreage under crop was only fifty thousand acres. When, in 1870, representative government was established the land alienated from the Crown was still under one and a half million acres, of which more than half a million acres had been granted in fee simple to the very early arrivals under the regulations which operated only until the end of 1831. One of the first acts of the new Legislature was to revise the land regulations in accordance with the ideas of

the Surveyor General (Sir Malcolm Fraser). The purchase price remained at 20s. per acre, but was made payable over ten years.

Not until 1887 was a determined attempt made to encourage the greater use of the land. John Forrest was then Surveyor General, and at his instance regulations of characteristic boldness were gazetted. His aim was to secure residence on and improvement of the land, rather than cash for the Crown. The price of conditional purchase lands, with residence, was fixed at 6d. per annum per acre for twenty years, with improvements to the same amount. In effect this meant that the old price of 20s. per acre was cut in half, one moiety being payable to the Crown over twenty years without interest, whilst the remaining moiety was available to the settler for the development of his holding. The minimum area was fixed at 100 acres, and the price of land without residence remained at 20s. per acre (reduced six years later to 10s. with double improvement obligations). No alienation of rural lands was allowed outside the South-West division except in specially declared areas, or on application by pastoral lessees up to one per centum of the total area held by them. Provision was made for surveying and declaring agricultural areas before selection, and the Colony was divided into six divisions for the purpose of administration. As under the old regulations, simultaneous applications were decided by lot.

The effect of these reforms was quickly noticeable. During 1890—the first year of Responsible Government—1,838,768 acres of land for agriculture was disposed of, making the total alienations up to the end of that year 5,154,673 acres (including portion of the land granted to the West Australian Land Company in consideration of the construction of the railway from Beverley to Albany, which eventually totalled nearly 3,000,000 acres, and 216,000 acres to the Hampton Plains Syndicate under special agreement).

The next important development was the passing of the Homesteads Act in 1893, providing for free homestead farms up to 160 acres to the head of a family or any male over 18 years of age; and for conditional purchase homestead leases of second and third class land at 6s. 3d. and

MAP OF
WESTERN AUSTRALIA
SHOWING
LOCALITIES OF PRIMARY INDUSTRIES
1929
Scale of Miles
50 0 50 100 150 200
Total Area ..... = 975,920 sq. m
Total length of coast line = 4350 m.
Extreme distance N to S = 1265 m
E to W = 985 m.
Railways
117° 121° 125°
16° 20° 24° 28° 32°
WYNDHAM
MT HANN
IRON
DERBY
BROOME
PEARLS
PEARLING GROUNDS
PORT HEDLAND
MAINLY CATTLE RAISING
WOOL
GOLD
CATTLE
GOLDFIELD
COLDFIELD
PEARLS
COSSACK
GOLDFIELDS
TIN
MARBLE BAR
NW Cape
ONSLOW
COPPER
WOOL
MT BRUCE
(4024 ft)
CATTLE
WHALING
PASTORAL PORTION
ENGLAND
AND
WALES
On same Scale
as this Map
HORSESHOE
MANGANESE
CARNARVON
PEARLING GROUNDS
PEARLS
FISH
MAIN PASTORAL COUNTRY
MEEKATHARRA
SANDSTONE
LEAD
WHEAT
GERALDTON
AGRICULTURE
LEONORA
LAVERTON
DESERT COUNTRY
KALGOORLIE
TRANSCONTINENTAL RAILWAY
NORTHAM
PERTH
FREMANTLE
FRUIT
WINE
CEREALS
NORSEMAN
EUCLA
NARROGIN
BUNBURY
COAL
TIMBER
STIRLING RA
HOPETOUN
ESPERANCE
C Leeuwin
ALBANY
WHALING
113° 117° 121° 125° 129°

3s. 9d. per acre respectively (and half cost of survey) spread over thirty years without interest. In each of these cases residence was an essential condition during portion of the first five years. The passing of the Agricultural Bank Act in the following year further stimulated settlement.

In view of the enormous area of the Colony still unalienated it is curious to note that as early as 1896 it became necessary to pass an Agricultural Lands Purchase Act to enable the Crown to repurchase estates suitable for closer settlement: usually estates to which facilities of transport had been provided by the construction of railways. Up to June 30, 1928, the provisions of this Act had been employed in the repurchase of 905,705 acres of land at a total cost of £1,179,743, of which 345,110 acres, costing £605,075, had been made available for the settlement of returned soldiers. In 1897 the West Australian Land Company's railway and lands were repurchased under a special Act, and the lands were made available for settlement under Crown conditions.

It was not until 1898 that the first Land Act under responsible government was passed, previous regulations having been issued under the Imperial statute. The Act followed very largely the more recent regulations but made more effective provision for administrative details. It provided that all pastoral leases should expire on December 31, 1928.

By 1900 the area of land alienated had decreased to 3½ million acres, due chiefly to the repurchase of the property of the W.A. Land Company under the Great Southern Railway Act of 1896. In February, 1886, the Midland Railway Act was passed, under which the Midland Railway Company, between the years 1890 amd 1910, selected 3,319,464 acres.

It is significant of the slow development of agriculture that by 1900, seventy years after the Colony was established, the aggregate wheat production over the whole period had been only fifteen million bushels, or considerably less than one-half of the annual production twenty-seven years later. The use, commencing early in the present century, of superphosphates was a potent factor in increasing the profit resulting from the cultivation of the land,

and combined with the generous conditions of settlement inaugurated in 1887, set up a strong demand for agricultural areas. The alienations for the four years ended 1905 aggregated well over four million acres. In the same period new pastoral leases were approved covering an area of over 90,000,000 acres.

In 1906 the ballot for deciding simultaneous applications for land was abolished, and a board of three persons was substituted. The decision of the board is final. Legislative provision was also made for the decentralisation of the operations of the department, paving the way for the opening of district land offices in important country centres. By 1914 nearly eight million acres of agricultural land had been disposed of and the area under crop was 1,867,547 acres. Then came the war, and, coincidentally, the State's single experience of a general drought in the wheat areas. Heavy enlistments for service abroad resulted in decreased selection during the war period.

An amendment of the Act in 1915 reduced the price of conditional purchase land to 3s. 9d. per acre where inferior quality or distance from a railway justified it, and to 2s. 6d. where the land was infested with poison. Two years later poison-infested land was reduced to 1s. per acre, and the maximum price of ordinary conditional purchase land was fixed at 15s. per acre. Under the 1915 Act there was a repricing of lands that had been sold at higher figures than those set out in the legislation of that year, as a result of which concessions were made to purchasers aggregating £627,124.

Two other far-reaching amendments were made in 1917, one providing that conditional purchase lands should be granted rent free for the first five years ; and the other that pastoral lessees might surrender their leases expiring in 1928 and acquire new leases extending to 1948 conditionally on a maximum area of 1,000,000 acres, and subject to additional improvements, stocking, and reappraisement of rent. So far as agricultural lands were concerned, the concessions of 1915 and 1917 had an important effect. At the close of the war the generous provision made for the settlement of returned soldiers and the continuance of a vigorous policy of railway construction throughout the

agricultural areas further stimulated settlement, with the result that by the end of June, 1928, 12,788,968 acres had been alienated, 20,533,350 acres were in process of alienation, and 237,419,577 acres were held under pastoral lease or license. The area of land still unselected at that date amounted to 353,846,905 acres. In the closing half of 1928 the applications for land under all headings reached nearly 9,000,000 acres. In this brief review it has been sought only to trace the main developments of a system of land settlement probably more generous than any that exists in other parts of the world. A comprehensive summary of the conditions as they obtain at present, issued on the authority of the Under Secretary for Lands, is appended.

CONDITIONS OF LAND SETTLEMENT:

Land in the State for the purposes of selection is divided by the Act into two classes—cultivable and grazing. Cultivable land is usually dealt with under Conditional Purchase, Sections 55 and 56, and Homestead Farms under Section 74. Grazing land, under the term of Grazing Leases, is dealt with under Section 68.

2. An applicant must be sixteen years of age and, in the case of a Homestead Farm, a male or head of a family.

3. A person (which term includes a partnership or corporation) is entitled under the Act to select 2,000 acres of cultivable land, or 5,000 acres of grazing land; or, if mixed, an equivalent area in the proportions of 2 to 5, and a person's wife can select half that area. Owing to the fact that this was considered far too much, the Minister in his discretion has limited the area to 1,000 acres of cultivable and 2,500 acres of grazing, or 5,000 acres of grazing land, to one person and his wife. In certain districts in the extreme southern portion of the South-West he has limited the total area of cultivable land to one person and his wife to an area which is considered sufficient for a person to make a living on, generally speaking, from 100 to 200 acres.

4. In cases where land is granted in the names of two persons as tenants in common or joint tenants, each person shall, unless the contrary is expressed, be deemed to be the holder of an area equal to half the area of the holding, and where three persons hold in their joint names, each shall be deemed to be the holder of one-third, and so on.

(TENANTS IN COMMON.—Each has an individual share, and on the death of one his interest forms part of his estate, to be administered by his executor or administrator.)

(JOINT TENANTS.—Each has an equal interest in the whole property. On the death of one his interest dies with him, the survivor becoming the sole owner.)

5. If the applicant for cultivable land intends to reside on it, the application is approved under Section 55. The area that can be granted under this section is a maximum of 1,000 acres and a minimum of 100. The lessee must reside within six months from the date of the lease, and make it his usual home during six months in each of the first five years. He may reside on other rural land within 20 miles distance, and residence by a wife or a parent or child over the age of 16 years may be accepted, but the Minister may prescribe personal residence if he desires. The lessee must expend an amount equal to one-fifth of the purchase money every two years for the first ten years, fencing at least half of the land within the first five years and the whole within a period of ten years. Where a great or small stock-proof exterior fence is erected, half the value of such fence shall be deemed a part of the improvements required between the fourth and tenth years of the lease, and where a rabbit or dog-proof exterior fence, capable of resisting great and small stock, is erected, the Minister may allow two-thirds to be part of the improvements. If the prescribed conditions have been complied with and the purchase money paid, the Crown Grant can issue at any time after a period of five years.

6. If a person does not desire to reside, and the land has not been thrown open specially under residence conditions, the land is granted under Section 56. Under this section the expenditure required on improvements shall be a sum equal to the purchase money, with 50 per cent. added thereto. All of the other conditions pertaining to Section 55 apply to this.

7. 160 acres may be granted as a Homestead Farm (Section 74), the only payment being the cost of survey and £1 5s. application fee, and in cases of larger areas being applied for under Sections 55 or 68, portion of the land is usually granted as such. The boundaries of the Homestead Farm in this case are not specially surveyed, unless the applicant desires the issue of the Crown Grant of the Homestead Farm before the issue of the Crown Grant of the whole location. The maximum area under this section is 160 acres, and the minimum 10 acres. The residence conditions are the same as Section 55. The improvement conditions are that, within two years of the date of the occupation certificate, the owner shall spend a sum equal to not less than 4s. per acre of the total area; within five years, 10s. per acre, and within seven years, 14s. per acre. £30 spent on the erection of a house is allowed to count as an improvement. Where a location is held jointly as a Homestead Farm and Conditional Purchase, or Conditional Purchases, the several holdings may be deemed to be one holding in respect to the required fencing and other improvements, but the value of such improvements on the whole area shall not be less than required in respect of both holdings. The Crown Grant can issue after the expiration of five years if the conditions have been complied with and if the

selector proves to the satisfaction of the Minister that he has resided on the Homestead Farm from the date of taking possession, and has made all the improvements required by the Act to entitle him to the Crown Grant. He may obtain it at an earlier date by paying 5s. per acre, together with the Crown Grant fee.

8. Grazing (or second-class) land is usually held under Section 68. Under this section the maximum area is 5,000 acres and the minimum 100 acres. The conditions are practically the same as Section 55, with the exception that residence may be performed by an agent or servant of the lessee and the fencing conditions must be complied with during the first ten years of the term.

9. Where land is classed as cultivable and grazing mixed, it may be comprised in the one lease, and if more than half the area is cultivable, the lease shall be granted under Section 55 or 56, and if more than half of the area is grazing land, under Section 68. The price of the land as a whole shall be the average of the pricing of the cultivable or grazing land comprised in the lease, and, for the purpose of computing the maximum area which may be lawfully held, five acres of grazing land shall be deemed to be the equivalent of two acres of cultivable land.

10. The minimum price of land in ordinary circumstances is 3s. 9d., and the maximum 15s., plus the cost of survey. Where the land contains poison scrub, etc., the price may be reduced to 1s., plus survey fee, and in the case of other very poor land, if the cost of the survey be paid down with the application, the Minister may price the land at a minimum of 1s. per acre.

11. Every Conditional Purchase or Grazing Lease, provided the survey fee is not paid in advance, shall be granted at an annual rent for the first five years of the term equal to interest at the prescribed rate per centum per annum on the cost of survey, and the value of the improvements, if any: Provided that the minimum rent during such five years shall be 10s. per annum. If the survey fee be paid in advance, no further payment is due for five years. The minimum term for the lease is twenty-five years, and the maximum 30 years, the term of the lease being governed by the price of the land. Up to 10s. per acre the lease is 25 years, and the lease is extended up to 30 years as the price is raised over this amount. Section (58c) provides that the rent shall not exceed 6d. per acre per annum, but if the price of the land would not, at the rate of 6d. per acre per annum, be fully paid within 30 years, the annual payments shall be proportionately increased.

12. If a person does not require extended terms of payment, he may apply under Section 57 for a maximum of 1,000 acres. Ten per centum of the purchase money is paid with the application, the balance being spread over 12 months in four equal quarterly instalments, or sooner, if desired. The licensee must fence the whole within three years, and expend, in addition, within seven years, in prescribed improvements, 10s. per acre. So soon as

the purchase money and Crown Grant fee is paid and other conditions complied with the Crown Grant shall issue.

13. Small areas suitable for orchards and gardens are disposed of under Section 60, maximum area fifty acres. Ten per centum of the purchase money must be deposited with the application, the balance to be paid within three years in half-yearly instalments : the land to be fenced within three years, and within the same period at least one-tenth of the area to be planted with vines or fruit trees, or cultivated in a *bona fide* manner as a vegetable garden. On payment of purchase money and Crown Grant fee, and completion of other conditions, the Crown Grant can issue.

14. In all cases improvements must be commenced within six months of the date of the lease and carried on to the satisfaction of the Minister.

15. If the holder of a lease under Sections 55, 56, or 68 desires to obtain the Crown Grant before the expiration of the Lease, and pays in advance the balance due, he is entitled to a rebate on that balance of an amount calculated actuarially on a five per cent. basis.

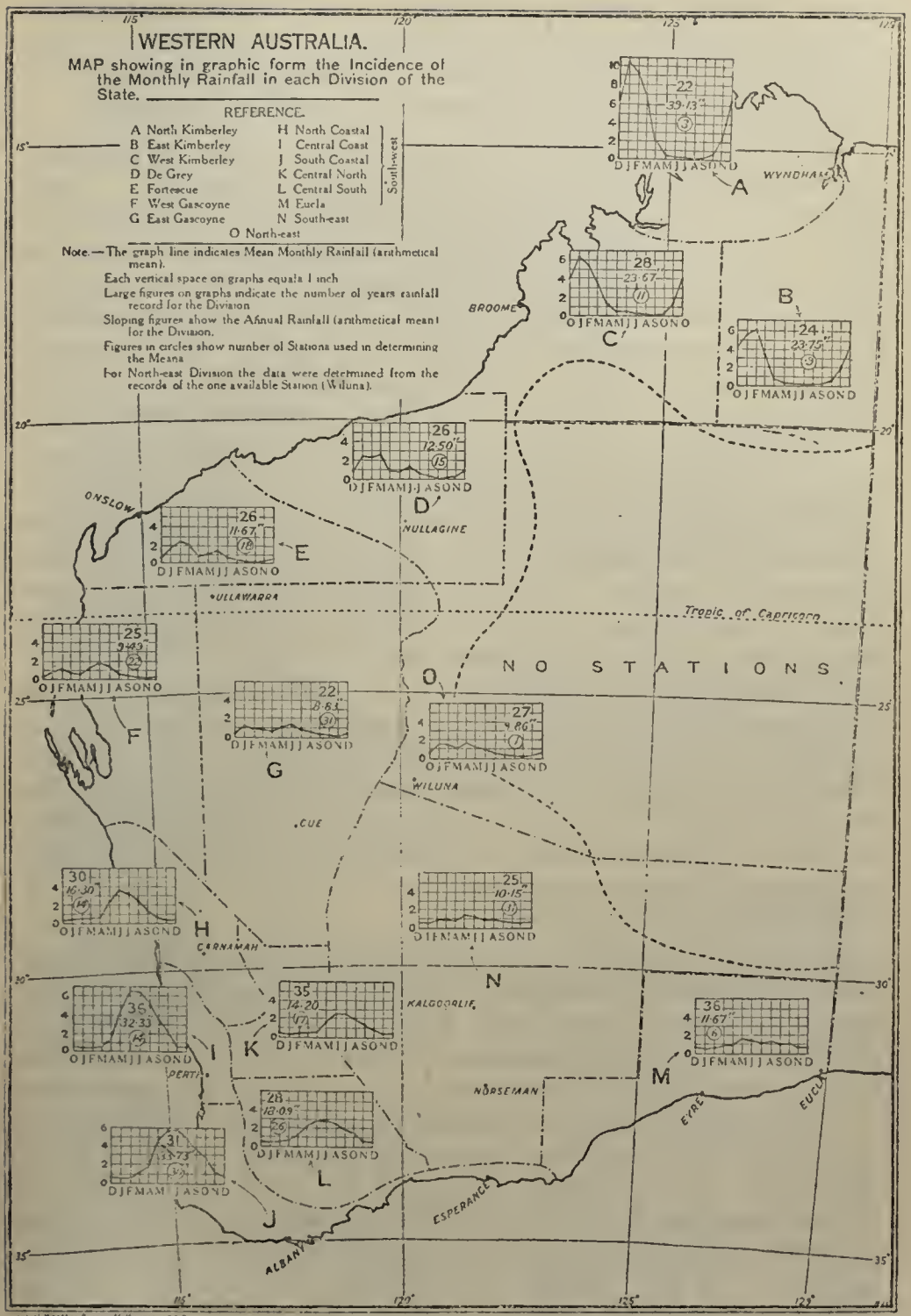
16. Pastoral Leases are granted for a term expiring at the end of 1948. Any individual selector or registered pastoral company may acquire up to 1,000,000 acres in one or more blocks, the minimum area being 20,000 to 50,000 acres. Rent is fixed by appraisement and is re-assessed at the expiration of the first 15 years of the term, but not increased by more than one-half of the amount fixed during the first term. Pastoral leases must be stocked within two years at the rate of ten sheep or two head of large stock for each 1,000 acres ; within five years with double that number ; within seven years, and during the remainder of the term, with three times that number. Improvements are required to the value of £5 for each 1,000 acres during the first five years, and a further £5 per 1,000 acres in the next five years.

XXII: CLIMATIC CONDITIONS.

XTENDING over 20 degrees of latitude Western Australia embraces a wide range of climate. The far north—the "Kimberley division"—lies in the region of summer monsoon rains, while the south enjoys the regular winter rainstorms characteristic of the temperate belt of each hemisphere. Between the two lies an area dominated by the dry anti-cyclonic zone. This area extends from the coastline a little to the south of the tropic, in a south-easterly direction through the Coolgardie goldfields. It has a rainfall rather under than over 10 inches, but the extremes of drought which, in similar northern latitude, produce the great Sahara desert, do not occur. Great heat is experienced in the summer, but humid heat is almost unknown, and there are cool periods. Clear, cold nights are common in winter, and sharp frosts occur inland even in the tropics. Admitting its severity, the goldfields climate is far from enervating. Goldfields children thrive, and an occasional holiday to the coast is all that is needed, even by delicate women, to maintain good health.

The south-western quarter embraces the coastline from Geraldton to Esperance, and the agricultural belt which extends inland to meet the goldfields. 250 miles east of Perth wheat growing is conducted with an annual average rainfall as low as 10 inches, and many a successful crop, in drier years, has been reaped with a five-inch fall in the growing period. Over most of the wheat belt the rainfall is between 10 and 20 inches.

Nearer the coast, and especially to the southward, with falls of 20 inches and upwards, sheep farming, oats, fruit and vegetable crops tend to replace wheat, and, on the coastal side of the ranges, over a belt of 30 to 100 miles wide, is the home of the giant trees—jarrah and karri—with rainfall as high as 60 inches. Here cultivation takes the form of gardening on intense methods, orchards and fodder


WESTERN AUSTRALIA.
MAP showing in graphic form the Incidence of the Monthly Rainfall in each Division of the State.
REFERENCE.
A North Kimberley
B East Kimberley
C West Kimberley
D De Grey
E Fortescue
F West Gascoyne
G East Gascoyne
H North Coastal
I Central Coast
J South Coastal
K Central North
L Central South
M Eucla
N South-east
O North-east
South-west
Note.—The graph line indicates Mean Monthly Rainfall (arithmetical mean).
Each vertical space on graphs equals 1 inch
Large figures on graphs indicate the number of years rainfall record for the Division
Sloping figures show the Annual Rainfall (arithmetical mean) for the Division.
Figures in circles show number of Stations used in determining the Means
For North-east Division the data were determined from the records of the one available Station (Wiluna).
D J F M A M J J A S O N D
WYNDHAM
BROOME
ONSLOW
NULLAGINE
WILLARA
Tropic of Capricorn
NO STATIONS
WILUNA
CUE
CARNAMAH
KALGOORLIE
PERTH
NORSEMAN
ESPERANCE
ALBANY
EYRE
EUCLA
115°
120°
125°
15°
20°
25°
30°
35°

crops flourish, and magnificent citrus fruits are grown. In recent years the dairying industry has made its way, a rather unfavourable rainfall distribution having been overcome by the establishment of suitable pastures.

The long, dry half year of summer usually furnishes a succession of warm and cool spells. Extended "heat waves" are rare in Perth and on the coast generally, and even at their height but few days pass without at least an hour or two of relief in the afternoon when the sea-breeze, blowing at an average rate of 20 to 25 miles per hour, brings about a drop in temperature from the 90's or 100's to something below 80 degrees. Even on the fringe of the coast humid days are rare, and dry heat is always bearable.

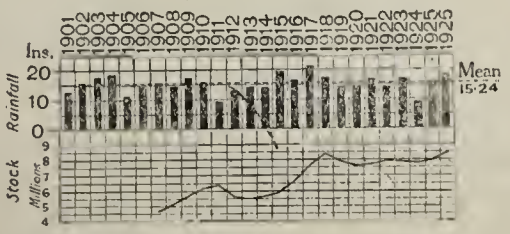
As the Perth rainfall averages nearly 35 inches per annum, most of which is concentrated into six or seven months of the year, the winter is wet, and the rain sometimes depressingly persistent. However, the fine intervals compensate by being really fine—sharp mornings, sometimes frosty, and brilliant sunshine all day, perhaps only for a day or two, perhaps for a week or even longer. The climate of Perth (and, more or less, that of the whole south-western quarter of the State) is, in fact, the climate of the Mediterranean, of California, the Cape Province, and Central Chile, all of which are characterised by mild, wet winters, warm, dry summers, and a minimum of variation from year to year. Although neither drought nor flood are entirely unknown, they are extremely rare visitors to this part of Western Australia.

In the far north the summer monsoon rains may begin as early as October and last until May. Usually the season is much shorter, and both the time and the amount of rainfall vary greatly from year to year. The heaviest rains fall on the North-West coast of the Kimberley country—a rugged coast with an almost impenetrable back-country—a land of precipitous river gorges and seething tide-channels. From Derby, the port of West Kimberley, to Wyndham, the outlet of East Kimberley, the only civilised posts on 500 miles of coastline are some three or four mission stations. At Pt. George IV. Mission the rainfall reaches 60 inches, but the main occupied belt which follows the valleys of the Fitzroy eastward from Derby, and of the

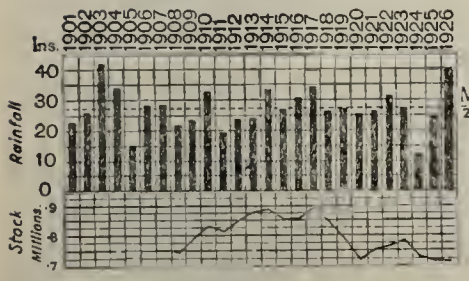
GRAPHIC REPRESENTATION OF THE APPROXIMATE ANNUAL RAINFALL OVER THE STATE OF WESTERN AUSTRALIA FOR THE YEARS 1901 TO 1926 INCLUSIVE

Shown for the State as a whole, and for the seven main Divisions of the State, accompanied by graphs indicating the numbers of Stock during the Years 1907 to 1925.

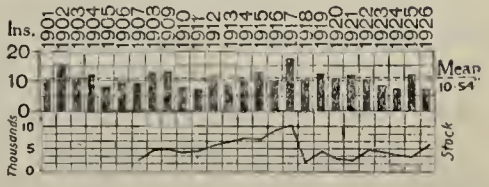
* THE STATE, WESTERN AUSTRALIA



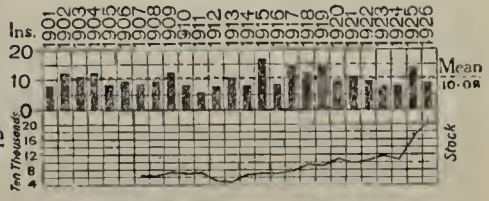
KIMBERLEY DIVISION



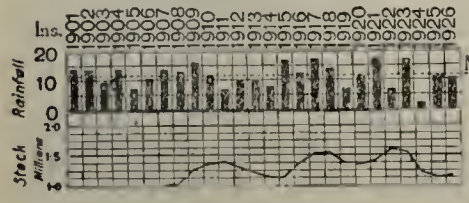
EUCLA DIVISION



SOUTH-EAST DIVISION



NORTH-WEST DIVISION



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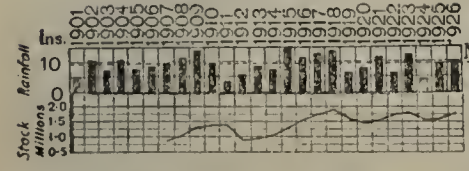
GASCOYNE DIVISION



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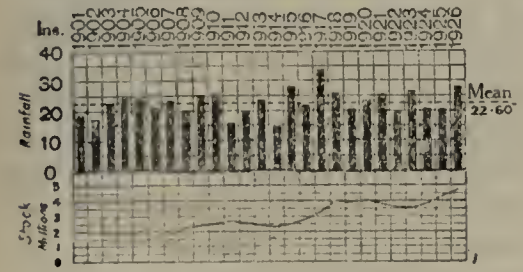


* Not including area of 281,794 square miles marked "No Stations" on maps.

NOTE.—Stock Data were obtained from the Official Records as published by the Government Statist in the "Statistical Register of Western Australia."

No figures available for years prior to 1907.

Central Weather Bureau, Melbourne

Ord southward from Wyndham, has an average of 20 to 30 and 35 inches. Cattle are the main product. These summer rains, falling on heated soil, produce phenomenal growth of grass—the backs of cattle being frequently overtopped. Intense heat is not uncommon, and is often accompanied by high humidity, making conditions much more unpleasant than those experienced under the even higher temperatures which frequently occur in the drier region further southward.

The North-West districts experience highly variable rainfall, but the soil is possessed of wonderful recuperative power, so that one really good downpour—say five to 10 inches in a few days—will put the country in good heart for sheep carrying for a year or longer. The climate fluctuates between that of the Kimberleys in good seasons and that of the dry interior in bad years.

A review of the climate of the tropical portion of the State would be incomplete without a brief reference to the terrific hurricanes, known locally as "Willy Willies," that occasionally visit the coast. Like the typhoons of the China Seas, their violence is irresistible. Partial demolition of towns, extensive havoc amongst the pearling fleets, and the loss of a number of fine steamships are amongst the toll exacted by these storms. In recent years the worst disaster was the total loss, with all hands, of the S.S. "Koombana" on the 21st March, 1912. On the other hand, the torrential rains which accompany these storms form a large part of the rainfall of the North-West. In 1898, for example, Whim Creek received 36 inches of rain as a result of one of these visitations.

Summarised, it may be said that the south-western quarter enjoys the well-known "Mediterranean climate." The dry belt, embracing the Gascoyne and goldfields, resembles somewhat Southern Algeria, the less arid parts of South-West Africa, and Rajputana in India. The climates of Syria and the Soudan are also resembled, but less closely. The Kimberleys do not very closely resemble any other well-known part of the globe—perhaps because no other extensive northern coastline exists within similar latitudes—but the Congo Coast, Western Mexico, and North-Western Madagascar afford fairly close parallels.

XXIII: TRAINING THE YOUTH.

O YOUNG COUNTRY in the world has a prouder record of educational achievement than Western Australia. Its population is scattered, almost without parallel, but no child is beyond the reach of public instruction. The number not actually receiving education is negligible; the average of school attendance is 90 per cent. of the total enrolment, and education is free from the Kindergarten to the University. In the first ten years of settlement education was left largely to the different religious denominations, though as early as 1830 there was an "acting-schoolmaster" receiving an allowance of £4 monthly from the Crown. Prior to 1840 the Church of England had established a Grammar School in the capital, and, with Government aid, primary schools were operating in different parts of the Colony. Then the Board of Education was appointed and Government schools quickly achieved predominance. In 1848 the schools in operation and the number of pupils were :—

Schools.	No.	Male Pupils.	Female Pupils.	Total.
Governmental—				
Perth	2	55	28	83
Perth Infant	....	27	33	60
Fremantle	2	26	10	36
Murray	1	9	5	14
Guildford	1	18	6	24
York	1	28	....	28
Albany	1	14	19	33
In connection with Roman Catholic Church	3	61	105	166
Total	11	238	206	444

Unfortunately most of the earlier reports of the Board of Education have disappeared. One for the year 1857 declares that the experiment of requiring the pre-payment of school fees was acting satisfactorily. A new system had also been inaugurated under which fees were paid over to the account of the Board, instead of being received by the masters as formerly. "The sum thus placed at the absolute disposal of the Board is found a very convenient resource, from which to defray all minor charges connected with the working expenses of the school." A request was

Perth Technical School.

made for funds for a school building, the cost of which, it was said, "need not exceed £400." In the report is found the first suggestion of a scheme of compulsory education in order to overcome "the chief obstacle to the success of any plan of education, viz., the short, irregular, and desultory attendance of children at school." Already Victoria was endeavouring to meet the difficulty "by direct legislative interference," but the Board suggests as an

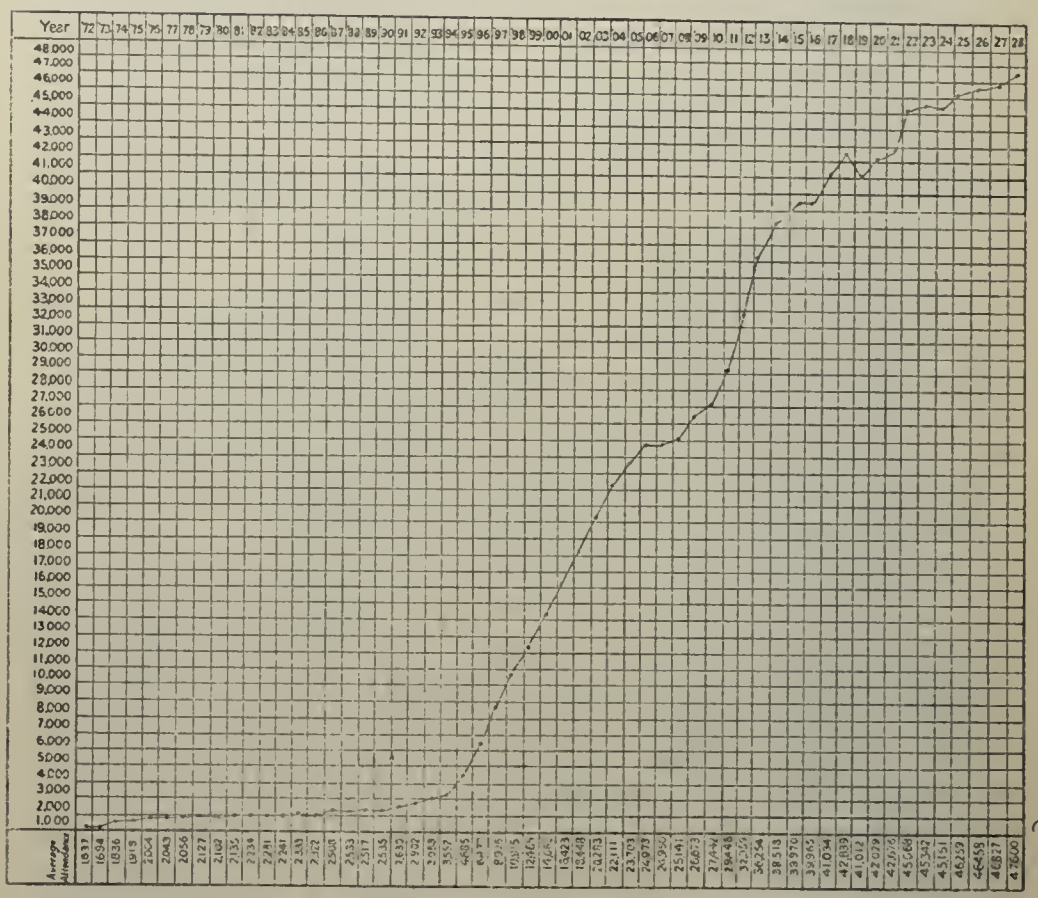
alternative " the more general introduction of a practical system of instruction bearing directly on the trading or agricultural pursuits of each locality, combining industrial work yielding wages, with the ordinary school teaching." The thorny question of religious teaching finds a place in the report, and the Board explains its policy:

> " We have consistently maintained the importance of recognising religion as the basis of all sound instruction, but have felt it our duty as constantly to refrain from interference with the conscientious scruples of parents whose children attend our schools. Hence whilst insisting that a Scripture lesson from 9 to 9.30 a.m. shall open the school work every day, we do not compel any child to be present until 9.30 when secular instruction commences. We invite all ministers of religion to take part as often as they will in imparting this religious instruction, stipulating only that they abstain from alluding to those differences of opinion which unhappily divide the Christian Church."

The schools operating in the Colony in 1857 were two in Perth, three in Fremantle, and one each in Guildford, Upper Swan, York, Toodyay, Bunbury, Vasse, and Albany. The head master of the Perth Boys' school received a salary of £150 per annum—the highest salary paid, whilst the others ranged from £100 for head teachers down to £25 for assistants.

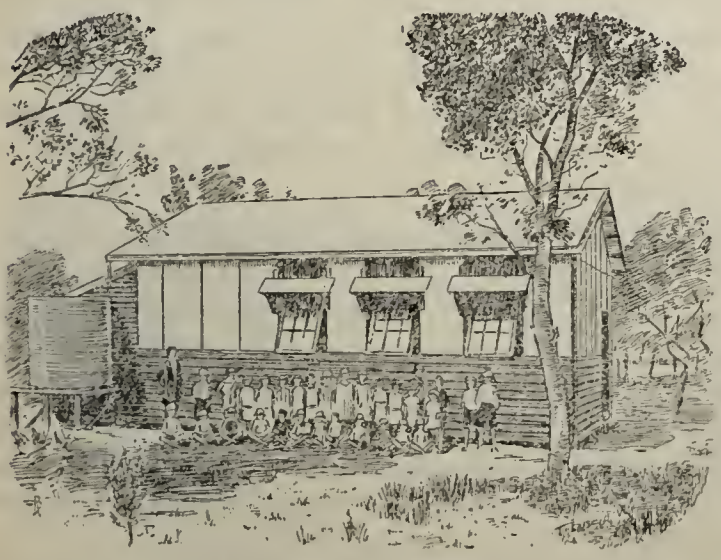
The present system dates from the passing in 1871 of " an Act to provide for public elementary education, and to encourage voluntary support of Schools." It called into existence the Central Board of Education of five members, of whom the Colonial Secretary was to be Chairman. No two of the other four members were to be of the same religious denomination. Local boards were also contemplated. The Central Board had power to appoint officers, to apportion the funds provided by the Legislature, and to fix a scale of fees. There was a special proviso that fees should not be exacted in cases of poverty. Education was made compulsory for all children from the age of six years to fourteen years, and the time for school work was fixed at five hours per day—" four hours at least to be devoted to secular instruction." At the passing of the Act there were sixty-three Government schools in operation in the Colony with an average attendance of 1,644 children, and these were educated at a total cost per head of £2 15s. 6d. No better illustration of the course of Western

Australian development can be afforded than the accompanying graph of school attendances from the passing of the Act. It indicates the almost complete stagnation of the first twenty years, the sudden forward leap with the discovery of gold in the early nineties, rapid and continuous progress up to the war period, a slight set-back at the close of the war, then further steady increase until the present day :—



In 1875 five of the teachers employed in the Greenough district received just £100 between them for their year's work. Of the seventy teachers in the employ of the State during that year one half received less than three shillings per day. All of those were country teachers. The head teacher in Perth received £334. The curriculum was confined to reading, writing, and arithmetic, with geography and grammar as extra subjects. The teachers were paid largely on results : fifteen shillings each for a pass in

reading, writing, and arithmetic, and 10s. for a pass in geography and grammar combined. The result—according to the report of 1876—was "a growing inclination on the part of many teachers to let geography drop out of the school course." There were no facilities for the training of young teachers, and as late as 1881 not one application was received from any young person wishing to enter the service.



Type of Small Country School.

In 1888 the Central Board promulgated a new regulation requiring candidates for office as teachers "to prove themselves competent to discharge their duties." This did not mean much: merely the possession of a certificate of competency, about equal in standard to the present day qualifying certificate for children of twelve to thirteen years. At that time ten teachers held efficiency certificates, nine competency certificates, and the remaining sixty-three had no certificates at all.

As in every department of Western Australian life, true advancement in educational methods came with the granting of Responsible Government in 1890. A new Inspector (Mr. J. P. Walton) was imported from England and quickly placed his fingers on the weak spots in the system: inadequate staffing due to poor salaries; non-enforcement of compulsory attendances; payment by results; and want of proper facilities for the training of teachers. Following the inrush of population to the Coolgardie and Kalgoorlie goldfields, money became available for the services of the people, and the infusion of new blood from the more advanced Eastern States made itself felt. In 1896 Mr.

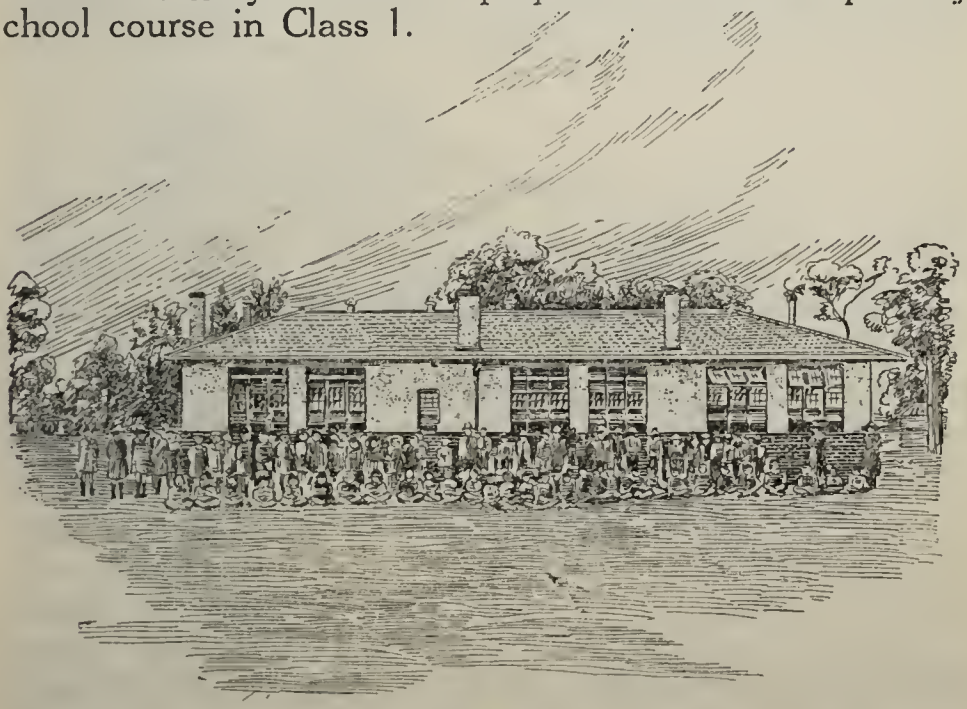
Cyril Jackson (afterwards Sir Cyril, and a leading member of the London Board of Education) was appointed Inspector-General. In 1901 a College was built at Claremont for the training of teachers and Mr. Cecil Andrews, M.A. (the present Director of Education) was brought from England as its Principal. In 1895 State aid to denominational schools was abolished, Parliament voting a special sum as compensation. In 1899 a beginning was made with technical education and in the following year school fees were abolished. The stage was set for an educational development in the new century, probably unexcelled in any country in the world.

Under the system as it exists to-day, the central authority is the Minister for Education, his executive officers being the Director, the Chief Inspector, three senior Inspectors, and eight district Inspectors, each resident in his own district. The system embraces primary, secondary, and technical education. The immense size of the State and the scattered character of the population vastly increase cost. Of 825 schools about 56 per cent., have each less than twenty scholars.

Prior to 1920 there were in the larger centres of population several purely infant schools of the kindergarten type in which Montessori methods were practised. In that year it was decided no longer to admit children until the half year in which their sixth birthday fell. The State had just entered upon a greatly extended system of education for children over fourteen, and the decision to discontinue the work with the younger children was arrived at partly for financial reasons and partly in the belief that six years was young enough for a child to start its school life. Opinion is divided between those who think that for the very small

Larger Country School.

child home is the best school, and those who fear that the children of poor homes are handicapped by the lack of early training. In the meantime the infant school has become a junior school in which for a year or eighteen months the six-year-olds are prepared to enter the primary school course in Class 1.



Type of Infant School.

The care of the smaller children devolves upon the Kindergarten Union, an organisation depending upon private charity augmented by Government subsidy. The first free playground and kindergarten was opened in 1914, and there are now six in the metropolitan area. Between 400 and 500 children pass through these annually. Other districts are to be supplied as funds permit. The value of the free playground and kindergarten in the poorer districts, where mothers often have to go out to work, is inestimable. There is also a paying kindergarten and sub-primary school in West Perth with a roll of about 50 children. The movement makes a strong appeal to the public and may with great advantage be widely extended.

In many of the town and suburban junior schools a daily milk supply has been instituted under which, at a

cost of a penny, a child is supplied with nearly half a pint of milk of guaranteed purity, bought in bulk at wholesale rates and distributed under the supervision of the teachers.

In 1928 there were in operation 825 State primary schools of which 619 were one-teacher schools, 87 had two teachers, 37 had three teachers, and 82 had more than three teachers.

City Senior School.

In the town schools the system of co-education of the sexes is practised, but the playgrounds are separate. The work of the primary school is divided into six classes, and from the sixth the pupil qualifies for admission to a central school if he lives within reach of one, or for extended courses in Classes VII., VIII., or IX. The great majority of children proceed to a new grade each year. The curriculum is composed of well-defined groups of subjects: reading, oral and written composition, literature, spelling, mathematics (proceeding from elementary number work in Class I. to somewhat advanced arithmetical and mensurational problems in Class VI.), and history and geography beginning in Class I. and taking a steadily broader range throughout the school course.

Most of the school buildings have been erected within the past twenty-five years, are of modern design, and are provided with modern furniture. One age-old problem has been very definitely solved: the schools are popular with the children; hence the average attendance of ninety per cent. of enrolment without any need for activity on the part of the compulsory officer. In the case of country children living more than three miles from the nearest school, parents are given an allowance of 6d. per child

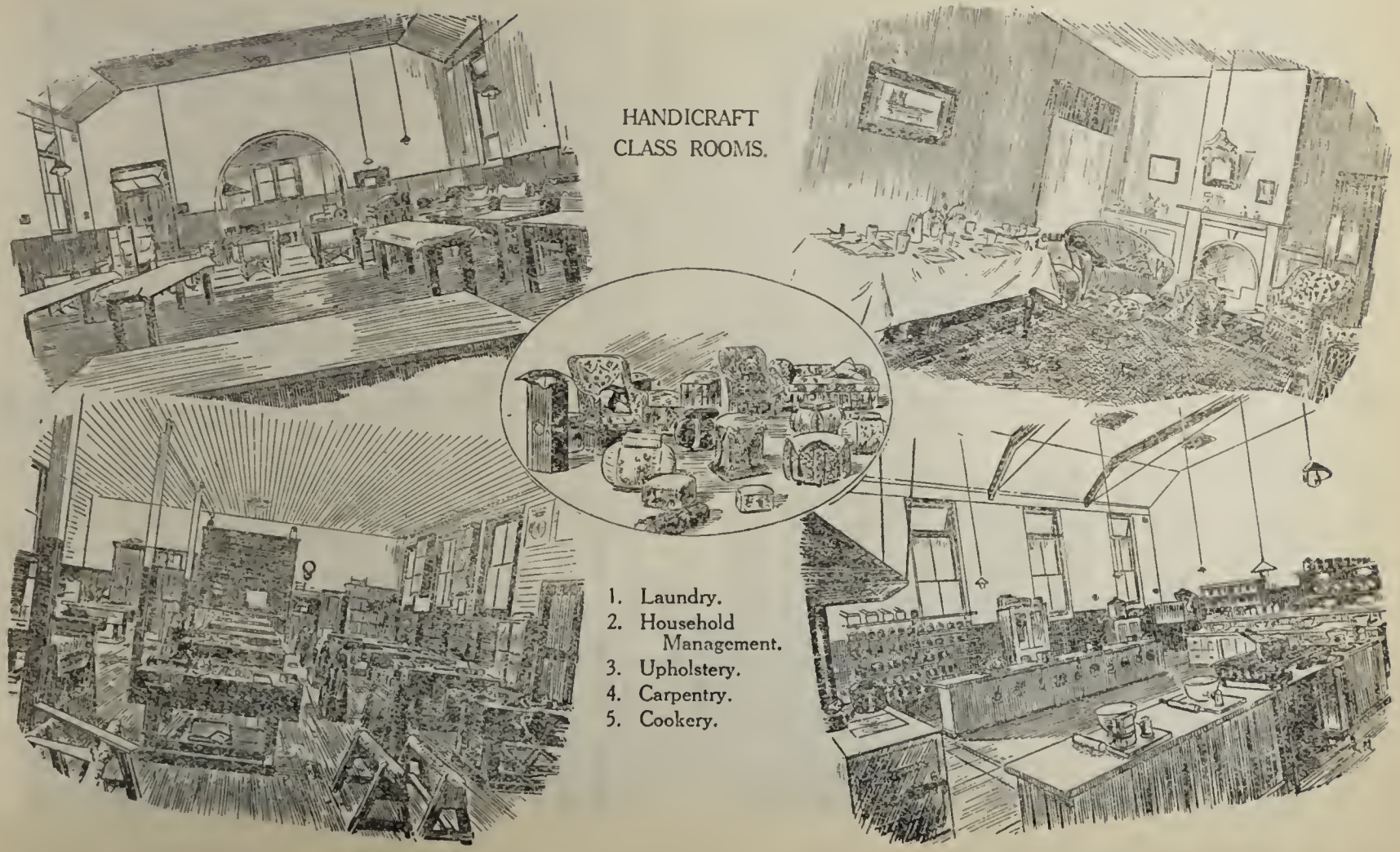
per day's attendance to cover the cost of their conveyance. In other instances the department provides transport free of charge.

The most important recent development has been in the education of the adolescent. In 1909 central schools were established in the denser areas of population. In these schools the courses are specialised: professional, commercial, and industrial. The latter is a two-year course, cultural and handicraft lessons proceeding *pari passu*. The pupils spend three days per week in cultural studies and two days per week in workshops and mechanical drawing rooms. The work is in the hands of specialist teachers. The syllabus on the handicraft side comprises a very full course in industrial drawing and advanced woodwork. A two-year course in metal work and sheet metal is given, and forge, lathe, and bench work are included.

Transport to Country Schools.

For the girls there is a domestic science course of two years in which three-fifths of the time is given to general culture and two-fifths to advanced cookery and laundry, advanced needlework, dress-making, millinery, upholstery, and other branches of domestic art. A three-years post-primary course has been made available to the children in the larger country towns, whilst even in the small isolated one-teacher schools, extended courses beyond the primary stage are arranged, largely through the instrumentality of the correspondence classes.

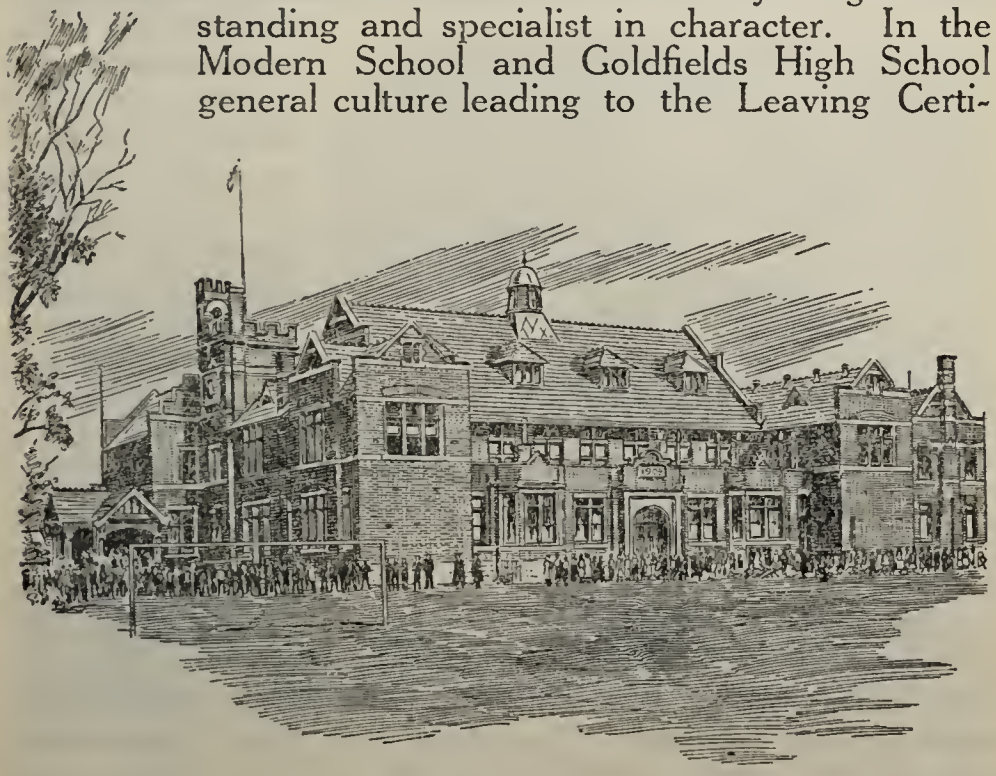
State secondary education on comprehensive lines commenced with the establishment of the Modern School in



HANDICRAFT
CLASS ROOMS.

1. Laundry.
2. Household Management.
3. Upholstery.
4. Carpentry.
5. Cookery.

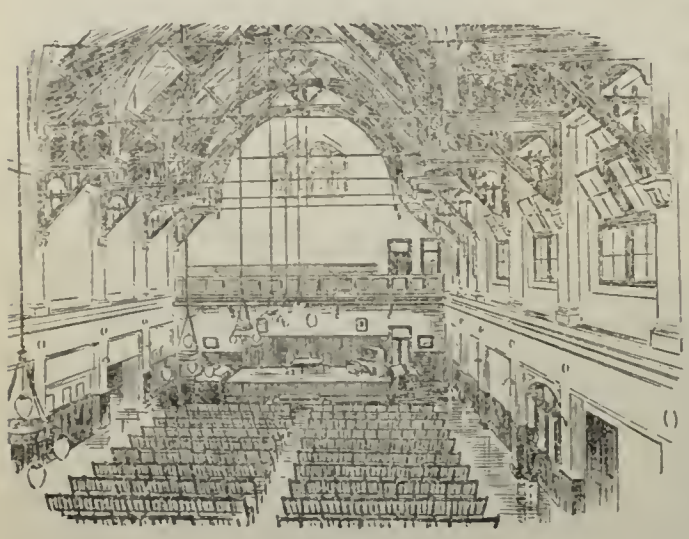
Perth in February, 1911. The Goldfields High School at Kalgoorlie followed soon after, and within the last ten years High Schools have been built at Northam, Bunbury, and Albany, whilst at Geraldton and Collie the District High Schools afford an intermediate secondary course. The staff of these schools is almost wholly of graduate standing and specialist in character. In the Modern School and Goldfields High School general culture leading to the Leaving Certificate embraces a wide range of subjects. English, French, and German are the chief language studies. Mathematics and science are compulsory to the Junior (Intermediate) University stage. History, geography, manual training, and domestic science are also taught, and music, art, and gymnastics are given fitting recognition. These schools also provide a commercial course leading to the University Commercial Leaving Certificate.



Modern School, Perth.

In the country High Schools the same general culture course is followed, but considerable attention is given to the bearing of science upon agriculture, and grounds sufficiently large for experimental work are attached to the schools.

Secondary school scholarships are awarded by competitive examination, fifty being offered each year. The money value of the scholarship to candidates within daily reach of the school by train is only £3, and as no fees have to be paid this amount is really a text book allowance. A grant to defray necessary travelling expenses is also made. Ten scholarships are reserved for country pupils, and scholarship winners who have to board away from home are given an additional allowance of £30 per annum. The scholarships are for three years, and candidates must be between twelve and thirteen years of age. Scholarships are tenable at other secondary schools than those under the State system, and children from other than State schools may compete. An additional fifty scholarships are offered each year to enable children from rural schools to attend the country High Schools, and these carry an allowance of £30 per annum to children who have to live away from home. These scholarships are not awarded upon competitive examination, but the candidates are selected on the recommendation of the district inspectors. The system has worked excellently.



Hall in Modern School.

Technical schools have been established at Perth, Fremantle, Midland Junction, and Boulder, and technical classes at Kalgoorlie, Collie, Beverley, Claremont, Bunbury, Geraldton, and Albany. Some of these classes are free, others are established on the condition that the members of the classes pay the instructor's fee. The subjects covered include: mathematics, physics, chemistry, geology, pharmacy, engineering, surveying, practical electricity, trade

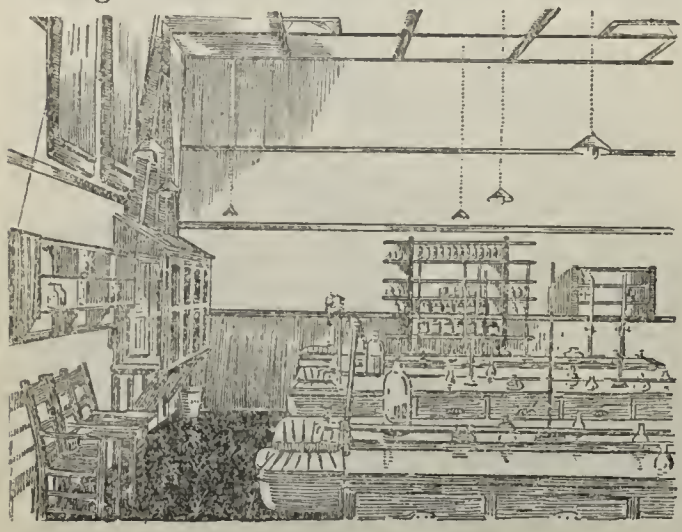
drawing, telephony, telegraphy, circuit drawing, blacksmithing, carpentry, fitting and turning, plumbing, sheet-metal working, printing, painting, signwriting, decorating, graining and marbling, tailoring, tailor's cutting, dressmaking, millinery, letterpress machining, and art in several branches. On the commercial side there are classes

Northam High School.

in shorthand, type-writing, book-keeping, and accountancy. In connection with the pharmacy course there are classes in materia medica and botany, whilst dental apprentices attend classes in dental surgery, anatomy, and physiology. Classes in motor mechanics and wool classing attract many students. At Kalgoorlie there is also a fine School of Mines.

In 1897 evening classes were established which have developed into continuation classes, and are now carried on in all the larger towns. They meet the requirements of pupils who have not been able to complete their primary school education, and of those who need some form of vocational training. Commercial and industrial courses are provided for both sexes.

Ten years ago correspondence classes were established in the interests of the outback children. Their work covers the lonely homes on cattle stations and sheep runs in the far north, the prospectors' camps on the remote goldfields, the farmsteads on the fringe of settlement, and the lighthouses around the coast. Starting in 1918 with a single teacher and an enrolment of fifty-four scholars, these classes at the end of 1928 employed a staff of 33 teachers, and reached no fewer than 1,449 children. The classes are under the direction of a senior Inspector and the teachers are highly and specially qualified. The progress made by the pupils is more than satisfactory, children who have never seen the inside of a school showing results equal to those attained by children of similar age enjoying ordinary school facilities. Of recent years the correspondence classes have been utilised to give opportunities of higher education to thousands of country children who have completed their primary course in the small schools.

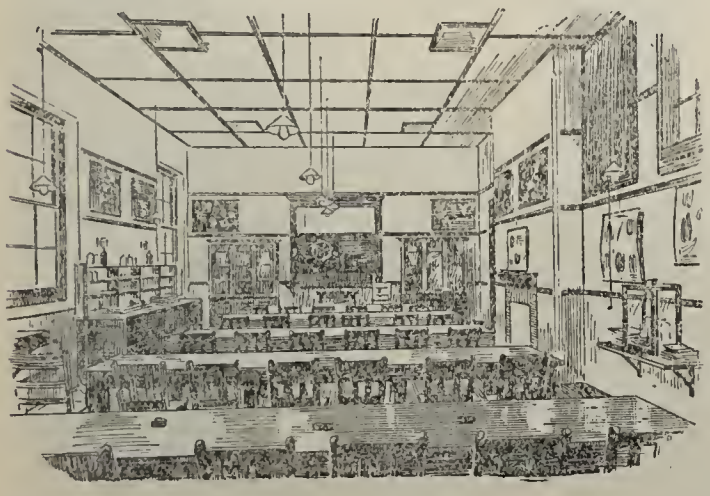


Chemical Laboratory. High School.

Attention has been given to the problem of the feeble-minded, and convalescent schools are carried on in connection with the children's hospitals. School hygiene and medical and dental inspection are being extended, and opportunity classes have been established for retarded children.

Conspicuous amongst the achievements of the last decade has been the improvement in the quality of the teachers. For this the establishment of the State High Schools has been chiefly responsible, as it is from these that the Teachers' College at Claremont has received its

supply of pupils. Competition for entrance to the college is keen, and selection is consequently possible. A special practice school of 200 children is located within the grounds of the Teachers' College, and attached to the college is a Central School with classes from the lowest grade in the primary school to the post-primary classes that reach the standard of the University Junior (Intermediate) Public Examination.



Physics Room, High School.

In 1927-28 there were 123 non-State schools in operation, with a total enrolment of over 12,000. Of this number more than 11,000 children were taught in denominational schools: Roman Catholic, 9,000; Anglican, 1,300; Presbyterian, 375; Methodist, 325; and Seventh Day Adventists, 120. State aid is not granted, but the schools are subject, by the Education Act, to inspection, and the Inspectors of the Department are welcomed as helpers and advisers. These non-State schools have given to the University and to the community many fine scholars, and have done much to foster physical development in their pupils by the encouragement of athletics. The more important of these schools are:—

Christ Church School, Claremont; Christian Brothers' College, Perth; Christian Brothers' College, Kalgoorlie; Christian Brothers' College, Fremantle; Church of England Girls' School, St. Mary's, West Perth; Convent of Mercy, St. Brigid's, West Perth; Girls' High School, Claremont; Guildford Grammar School, Guildford; High School, Perth; Ladies' College, Convent of Mercy, Victoria Square, Perth; Loreto Convent, "Osborne," Claremont; Loreto Convent, Perth; Methodist Ladies' College, Claremont; Perth College, Mt. Lawley; Presbyterian Ladies' College, Cottesloe; Sacred Heart High School, Highgate Hill; Scotch College, Claremont; St. Ildephonsus' and St. Gertrude's Colleges, New Norcia; Wesley College, South Perth.

The establishment of a Farm School at Narrogin early in 1914 was the first step towards the providing of a practical education in agriculture. It is conducted in connection with a mixed farm of 2,000 acres, and at the end of 1928 had accommodation for 56 pupils. These attend at ages ranging from 14 to 16 years. The course is of two

Princess May Girls' School, Fremantle.

years and provides a sound general education, whilst giving students an opportunity to acquire technical skill and knowledge in all phases of handicraft necessary to the settler upon the land. A fee of £30 per annum is charged for the maintenance of each student. The school is under a highly trained staff.

The farm activities include ensilage making, poultry raising, pig breeding, bee keeping, fruit drying, milk testing, butter making, bacon curing, culling, shearing, and wool classing, vegetable and flower gardening. On the manual side there are classes in rope making, string weaving, woodwork, forge work, plumbing, and making and

repairing harness. Hygiene and first aid classes are also held. Practical farm work includes a thorough training in all farm activities. Each year, during the recess of the ordinary students, courses are held for farmers and are largely attended and much appreciated.

Teachers' College at Claremont.

The accompanying table illustrates the progress that has been made from the passing of the first Education Act under representative government in 1871, until the present date. By the measure of the funds provided it also indicates the growing appreciation by Governments and Parliaments of the value and importance of free and compulsory State education. The periods selected for comparison are: the first year of

School of Mines, Kalgoorlie.

operation under the 1871 Act; the year which saw the introduction of Responsible Government; the year in which the federation of the Australian States was accomplished; the year before the great war; and last year:—

——	1872.	1890.	1900.	1914.	1928.
Government Schools open during year	60	82	223	602	825
Average attendance	1,637	2,535	14,663	38,518	47,588
Average enrolment	2,338	3,352	18,055	44,086	53,025
Percentage to enrolment ..	70	76	81	87.4	89.74
Number of teachers (certificated)	Not available	32	295	784	1,419
Number of teachers (uncertificated)	do.	54	85	462	214
Average salary, all adult teachers	..	£84	..	£160 19 10	£278 4 7
Average salary, all head teachers	About £50	£90	£131 18 9	£172 9 1	£305 3 2
Average salary, all assistant teachers	..	£78	..	£149 10 6	£252 19 11
Average salary, teachers in charge of schools under 20 ..	Not available	Not available	Not available	Not available	£248 19 7
Cost per head of average attendance (all costs excepting buildings and initial equipment)	£2 10 5	£3 7 11	£4 6 11	£6 3 7½	£10 18 5¼
Cost per head in schools of over 200	Not available	Not available	Not available	Not available	£8 10 8½
Cost per head in schools of 50 to 200	do.	do.	do.	do.	£10 10 1
Cost per head in schools of 20 to 50	do.	do.	do.	do.	£15 9 2½
Cost per head in schools of under 20	do.	do.	do.	do.	£19 14 3
Expenditure on buildings ..	do.	do.	£28,000	£40,596	† £76,434
State High Schools open ..	..	..	..	2	5
No. of High Schools' students	..	..	..	472	1,295
No. of Technical School students	..	..	Not available	1,912	3,622
Enrolment in continuation classes	..	..	418	1,697	2,593
No. of children 14 and over receiving regular instruction in State schools	Not available	176	763	2,266	3,475
Manual training students, average weekly enrolment (Woodwork and Metalwork)	..	..	572	3,779	‡ 5,587
Household Management students, average weekly enrolment	..	..	333	2,038	‡ 4,253
Total State expenditure for year	£5,060	£11,263	£106,030	£344,821	£784,728

† Including £4,440 on University and £129 on School of Mines. ‡ Including Government High Schools.

Muresk Agricultural College.

The most recently established branch of educational activity is the Agricultural College at Muresk. The need for such an institution had been long felt, when the present Collier administration in 1925 purchased Muresk farm. The property has interesting historical associations, having been first taken up by Mr. H. W. Reveley, who—when the "Parmelia" was nearing Fremantle—was appointed by Captain Stirling as Civil Engineer to the Colony. He acquired the land a few years after settlement was extended beyond the Darling Ranges, and gave it the name of Down Farm. Purchased in 1890 by another sturdy pioneer, Mr. Andrew Dempster, it was renamed Muresk.

In area, situation, and the quality of its soil, Muresk is admirably suited for the purpose of an Agricultural College. Over 2,200 acres in extent, it is situated in the Avon Valley, almost midway between the important agricultural towns of Northam and York, and is only sixty miles from Perth, adjacent to the main line of railway communication. Rich soil and genial climate permit of the carrying on of many types of agriculture: the cultivation of cereals fruit growing, dairying, the growing of root and fodder crops, and all branches of animal husbandry.

The College was opened in September, 1926, with sixteen students, and two years later the enrolment had increased to fifty-eight. It possesses distinct aesthetic advantages. The country is hilly, in parts rugged, and the river with its beautiful fringe of trees winds through the valley. The College buildings stand on rising ground, commanding a noble view of the river and surrounding country.

The aim of the College is to raise the standard of production in the State, by giving its students a comprehensive course in the science of agriculture and in farm practice. Theoretical and practical instruction are correlated. It is also a function of the College to initiate investigation, and by research and experiment to solve some of the problems that confront the agriculturist. Endeavour is made to raise the standard of stock in the farming districts by instilling in the minds of the students sound principles of stock management; and by breeding, and distributing amongst farmers, pure types of cattle, sheep, pigs, and poultry.

In its working and general organisation the College is closely associated with the Department of Agriculture, and its administration is controlled by the Minister for Agriculture. The Principal (Mr. H. J. Hughes) has the assistance of an Advisory Board of four members, including the Professor of Agriculture at the University of Western Australia, the Director of Agriculture, and representatives of the farming and commercial communities.

Still in its infancy, the buildings of the College at present consist of two dormitories, science class rooms and laboratories, and the domestic block. The dormitories are modernly equipped two-storey buildings in which each student has his own well-ventilated and suitably furnished bedroom. The old homestead has been remodelled for College purposes, with a dining room capable of seating eighty persons, and up-to-date culinary conveniences. The library and reading room is well provided with technical and scientific books, and a nice assortment of general literature. The science block has three class rooms well furnished and equipped. The laboratories are excellently lighted and conveniently arranged. The remodelling of the homestead and the erection of the new buildings have been carried out in accordance with a well-prepared plan, contemplating large extensions.

The course of instruction includes lectures and demonstrations, and records are kept by the students of all work done in the class room. The routine work of the year is enumerated in the farm diary, and excursions are arranged from time to time to places of agricultural interest. The course extends over three years, the specific objective being the Muresk Diploma of Agriculture. In the first year instruction is given in pure science so far as it is applicable to the study of agriculture, including the elementary sciences of chemistry, botany, physics, and physiology, in order to provide a ground work for the applied sciences taken in the second and third years. In these years agricultural chemistry, agricultural botany, veterinary anatomy and physiology, plant pathology, bacteriology, economic entomology, and agricultural engineering are taught. On the technical side instruction is imparted in farm crops, animal husbandry, veterinary

practice, dairying, fruit-growing, poultry-keeping, farm machinery, farm mensuration and surveying, building construction, wool classing, farm book-keeping, and farm management. The course of study includes English, agricultural history, and rural economics.

Students in the diploma course must cover the full range of practical work, taking part in all field operations on the farm, as well as in the smithy and workshop, and obtaining first hand experience in the breeding and management of stock. Their training covers the handling of teams and the use of implements and machinery, including tractors. Already the students, under the supervision of the building instructor, have erected buildings which have familiarised them with every phase of construction—including concrete work—which they are likely to meet on their own farms. In the blacksmith's shop they learn to shoe horses, and to weld and fashion the bolts and hooks constantly in demand on the farm. Under the farm manager the students carry out all cultural operations. Particular attention is given to instruction in sheep and wool.

About 600 acres are put under cultivation each year, the main crops being wheat and oats. Barley and peas are also sown. The live stock includes a fine herd of pedigreed Guernsey cattle, a flock of pure bred merino sheep, a herd of pigs, and pure bred poultry. Experimental work has just commenced with the cultivation of cereals and the growth of pasture plants. In the course of time this branch will be extended.

During the winter vacation the College holds classes for farmers, which are largely attended, chiefly by young men. Experts from the Department of Agriculture assist in a practical and useful programme of instruction. A rural domestic course for women has been instituted, including instruction in domestic economy, poultry keeping, gardening, and dairying.

Every facility and encouragement is given for sport and recreation, and in the summer the swimming pool in the Avon River, flowing through the property, is a great asset. Already the College has settled down into a well organised institution, with every promise of steady expansion.

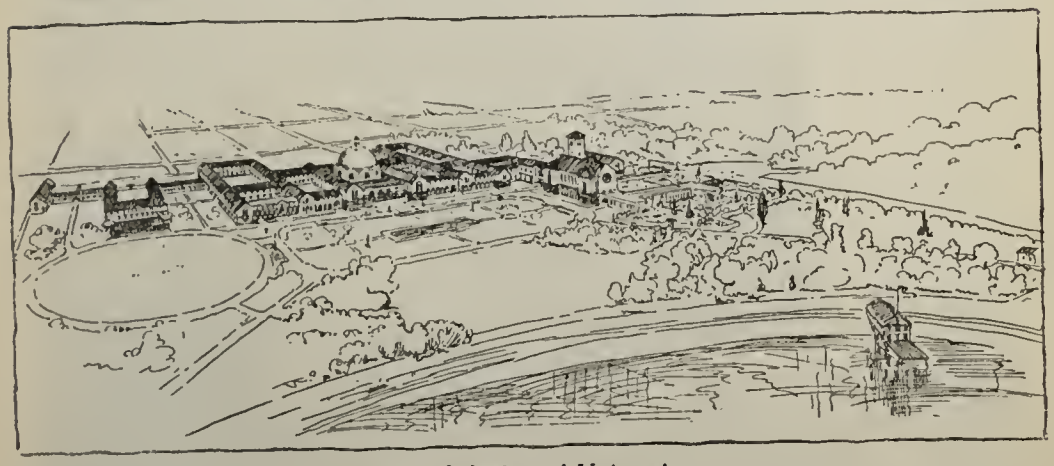
XXIV: THE UNIVERSITY.

IN THE nature of things, it can never be discovered who first conceived the idea of establishing a University in this State. All we can say is that in all probability the idea was "in the air" (as they say) long before 1901; for in that year there was a debate on the subject in the Legislative Council; and all the world is aware that a notion does not get itself discussed in Parliament till it has been for a good many years fluttering about in the world outside. As a matter of fact it must have been talked of at least as early as 1898, when a number of Perth citizens formed themselves into the Adelaide University Extension Committee, that the people might have some of the benefits of university influence even though it had to be exerted at long range.

Those were the Dark Ages, in which examinations were regarded, if not as the be-all and end-all of education, at least with an exaggerated and superstitious respect; and the University of Adelaide was kind enough to supply the State with an enormous number of examinations. Perhaps the examiners were treated with greater awe because they were unknown and mysterious beings at the other end of the Bight: *omne ignotum pro magnifico*. The Adelaide University, however, did better service than this: it sent over some of its most eminent teachers to deliver a series of public lectures in Perth; and the glimpse, thus given, of what a University means, must assuredly have set many people asking, "Why should we not have a University of our own?"

By 1901, as we have seen, the question pushed its way into Parliament, and the Legislative Council, after long debate, resolved—"That this House is of opinion that the advisability of at once establishing a University or University Institute demands, in the best interests of the State,

the immediate consideration of the Government." The words "at once" and "immediate" betray a cheerful optimism; as a rule, things do not happen quite so quickly as that. Three years passed without any further notice being taken of the idea by the legislators. Then, in 1904, a definite step was taken: Parliament created a University Endowment Trust, and handed over to the care of the trustees "about 4,000 acres of suburban lands, and some

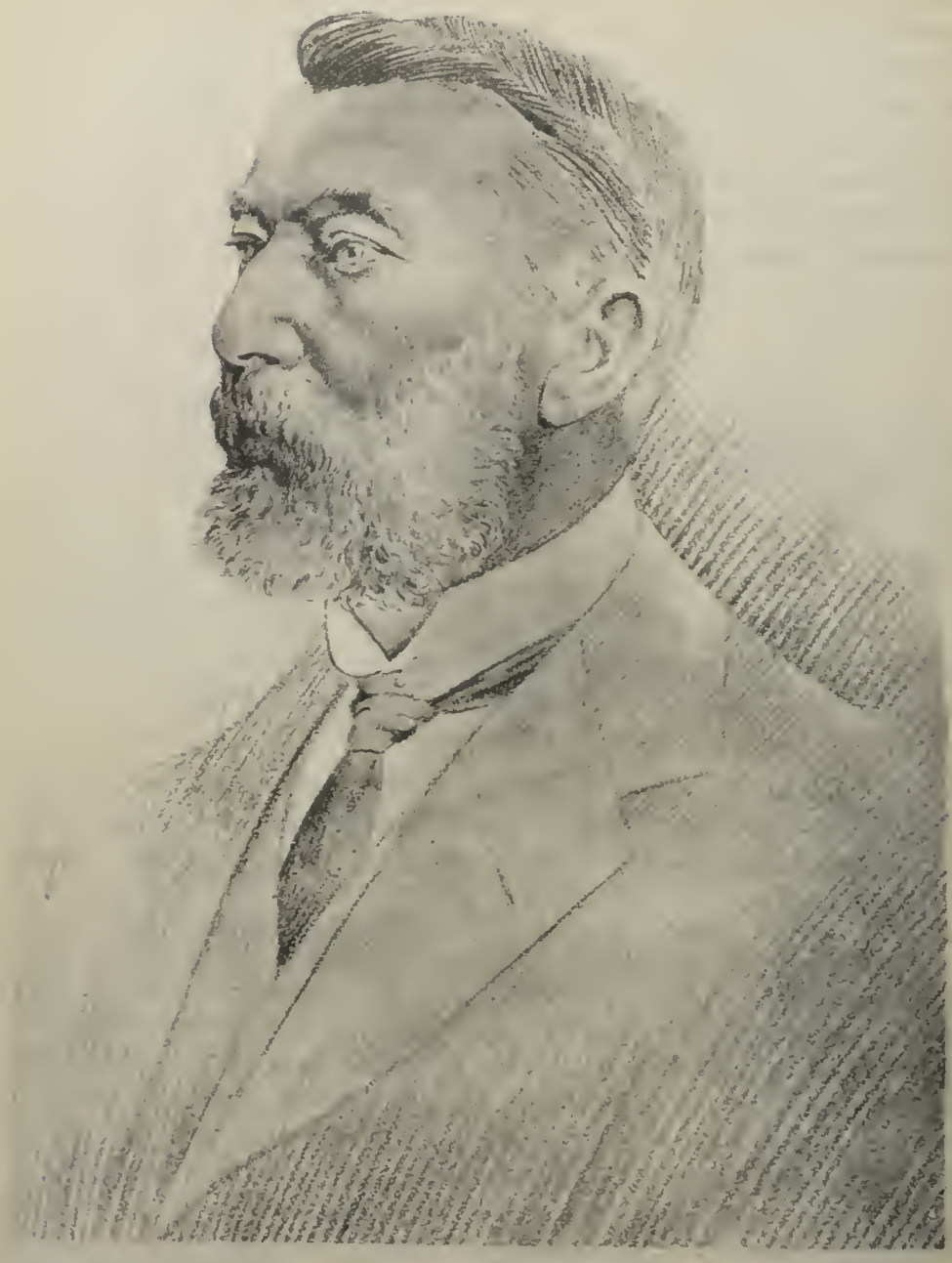


General design of University.

other blocks in various parts of the country," as an endowment for the University when it should come. Sir Walter James, then Premier, deserves credit for this piece of foresight.

By this time the idea had taken possession of several eager minds. Dr. Hackett (who will have to be spoken of, later, as Sir Winthrop Hackett) brought his great influence to the service of the project, and there were enlightened men and women who with patient enthusiasm kept hammering at the door of public apathy. It would be tedious to write in full the history of their various efforts, which deserve lasting gratitude, even though they be not remembered in detail. Their reward came when, in 1909, a Royal Commission was appointed to report "upon the question whether the time is opportune for the establishment of a University in this State."

The Commissioners included some of the most prominent citizens of the day. After many meetings they reported, in September, 1910, that the time was highly opportune;



THE FIRST CHANCELLOR—HON. SIR WINTHROP HACKETT, K.C.M.G., LL.D.

Born at Lordello, County Dublin, Ireland, 1848. Educated at Trinity College, Dublin. Died, Perth, Western Australia, February 20th, 1916.

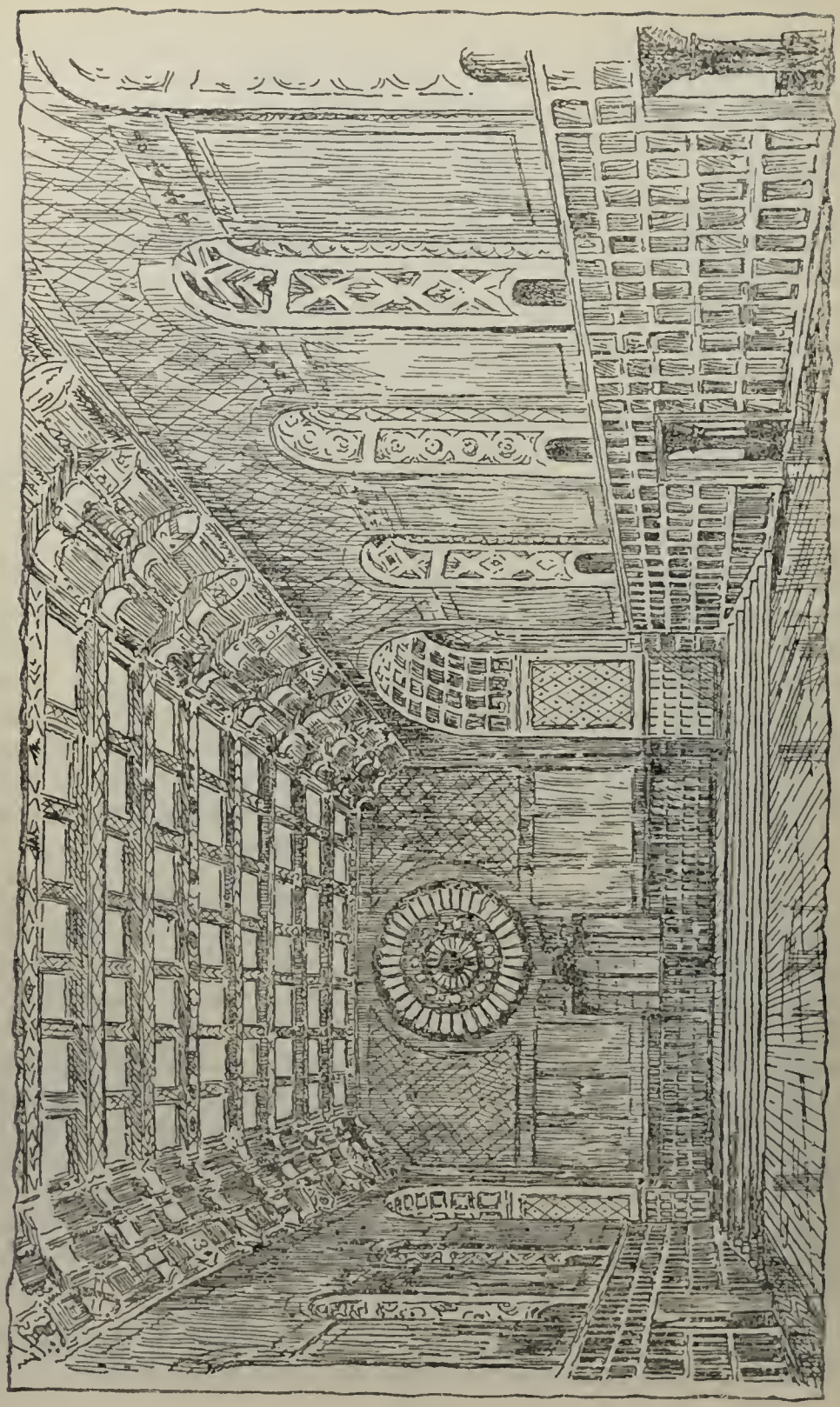
He arrived in Western Australia in 1882, and in 1883 acquired a partnership in the *West Australian* newspaper (founded 1833). For a third of a century he was a dominant figure in the social and political life of the State. He was a member of the Legislative Council; Grand Master of the Order of Freemasons; Registrar of the Archdiocese of Perth, and Chancellor of St. George's Cathedral.

and they submitted the draft of a Bill "to Establish, Incorporate, and Endow the University of Western Australia." Thereafter things moved with surprising rapidity, for the Bill became an Act of Parliament early in 1911. It provided that the governing body should be bicameral, the two chambers to be known as Senate and Convocation. The first Senate (nominated by the Government) came into being on February 13, 1912, from which date the University may be said to have existed, although Convocation did not reach the minimum number (60) prescribed by the Act till a year later.

The University Act provided that, in addition to the lands already mentioned, the University should have an annual endowment of £13,500; and the Government agreed to erect temporary buildings in the City, the permanent site not yet having been decided upon. (It may be mentioned in passing that stern battles were fought, in the early days of the Senate's existence, over this question of the permanent site, and that a cynical public found some food for ridicule in a debate so long-drawn-out; but, considering the immense importance of the question for the whole future of the University, there is reason to be grateful, looking back, for the earnestness, or even the bitterness, with which the merits and defects of the various proposed sites were weighed and judged.)

Apart from the site question, the most important task laid upon the shoulders of the Senate of 1912 was the appointment of the teaching staff. Before the end of the year seven professors and three lecturers were appointed; an eighth professor—of Agriculture—was appointed early in the following year; these made up the original teaching staff of the University. Early in 1913 they began to arrive, from the various distant regions from which they had been drawn (Oxford, London, Glasgow, Montpellier, Sydney, Melbourne, Brisbane, Liverpool), and in March began their teaching work in the temporary buildings; also their work as members of the Professorial Board and of the Faculties of Arts, Science, and Engineering.

A word must be said of these temporary buildings. With weather-board walls, asbestos linings, and corrugated



The Winthrop Hall.

iron roofs, they were unspeakably the reverse of impressive. On the teaching staff, every one of whom came from some old and dignified University, their effect was depressing; on the outside public it was not such as to inspire respect. Much of the apathy which the University had to fight in its early days was doubtless due to the fact that it was wretchedly housed. As the original buildings became inadequate, old structures were brought from elsewhere and re-erected beside them, the whole ramshackle becoming more unsightly with every addition. When citizens of Perth boasted that there were no slums in the city, the cynical visitor was wont to ask, "What about your University?"

At first, of course, the staff comforted themselves with the word "temporary," not dreaming that the seventeenth year of the University's existence would find it still in the same objectionable abode. Now that the foundations have been laid of a building which will be in every way worthy of a great University, the staff can afford to look back on their early experiences as a probably salutary discipline. The congestion was somewhat relieved when in 1914 the Engineering Department was removed to a more or less adequate building at Crawley, and in 1925 the Departments of Biology and Geology were given an almost (by comparison) sumptuous new abode, which the Government had built for them on the permanent site. (The long-drawn-out discussions on the question of the site had by this time come to an end, and a piece of land at Crawley, magnificently situated and adequately spacious, had been finally dedicated to the uses of the University.) The other departments continued and still continue to use the "temporary" buildings.

Its homelessness was a misfortune for the infant University, but this seemed a light matter when, in the second year of its existence, the war broke out. It has no reason to be ashamed of its war record; a great number of its male students volunteered at the earliest possible moment for service at the front. Among members of the staff may be especially mentioned the first Registrar, Captain S. E. Townshend, who was killed in action at the Dardanelles in May, 1915. He had, in his short term of office, shown

himself an admirable Registrar, and his death was felt as a severe blow to the University.

The war, seconded by a drought, crippled the State financially, and the University suffered. It carried on as best it could during the four years of conflict, and hoped for better times. It can scarcely be said to have made any advance during those years. With the coming of peace, it began to move forward again, and it has been moving forward, slowly but steadily. No year but has seen an increased number of students, some additions to the teaching staff, some new activities undertaken. Steadily also, as its students graduated and went out into the world,

Foyer to Winthrop Hall.

it has persuaded the public to a less contemptuous or apathetic attitude. In the early years there were many—and among them some prominent citizens—who thought and said that the time had not been ripe for a University in this State. To-day the voice of the doubter, if not silent, is less frequently raised.

The Royal Commission had recommended that no fees should be charged for tuition, and the idea of a free University, the first in the British Empire, caught the imagination of Parliament, and was adopted. Opinion has not been unanimously in favour of the experiment; and in 1921, tired of continual money troubles, the Senate decided that the free University had lasted long enough, and that moderate fees should now be levied. This was vetoed by Parliament, and the University remained and remains free. The attempt by the Senate had this good effect: it drew the attention of the whole State to the plain fact that, if it wants the luxury of a free University, it must be prepared to pay for it.

At every point the University has been hampered by lack of money. Governments have not been ungenerous; they have given what they felt able to give, but what they felt able to give has never yet been enough to meet the expanding needs. Money cannot make a great University—that depends on the quality of the teachers and the quality of the taught—but without money no University can grow, and without growth no University can live. For years the Senate has been forced to watch every penny of expenditure with extreme vigilance, and to turn down suggestions for new activities which it felt to be highly desirable if only the money could be had. It was, therefore, with deep relief, with a great lightening of spirits, that the Senate heard the news of the windfall that had come in the shape of the Hackett Bequest.

Sir Winthrop Hackett, who died in February, 1916, has already been mentioned as one of the foremost movers in the project of a University for Western Australia. He was the Chairman of the Royal Commission which brought the project to a head; and he gave practical proof of his sincerity by his offer, if the University should be established, to endow a Chair of Agriculture; an offer which was gratefully accepted, and for which he would be remembered to-day even if he had done nothing else for the University. But when he died it was found that he had done very much more; he had made the University the chief heir to his residuary estate.

At first it was not understood what this meant for the University. The value of the whole estate was, at the

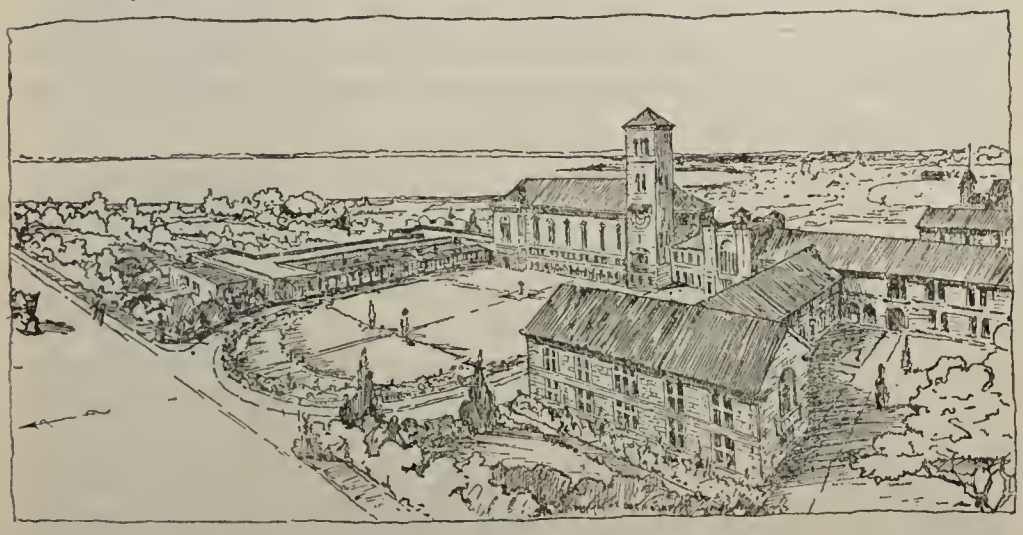
time of Sir Winthrop's death, very low compared with what it afterwards became; and it was generally thought that, by the time the other legacies were paid (if they could ever be paid), there would be no residuary estate at all. Early in 1926, however, the Senate learned, not only that the other legatees had now been paid the full amounts bequeathed to them, but that the residue included a very valuable property, the *West Australian* newspaper. Three-quarters of this property belonged to the University, and one-quarter to the Church of England for the purpose of building a College in the University. When the newspaper was sold, the University came into possession of about £425,000, and the Church of England of about one-third of that amount.

Gateway and Senate Window.

The sum of which the University thus unexpectedly became the owner was amply sufficient, not merely for the erection of the large hall which the testator had contemplated, but for a number of subsidiary buildings and for the endowment of a number of bursaries and studentships. An architectural competition was opened as soon as possible, and drew plans from various parts of the world. The very beautiful design finally accepted by the Senate is illustrated

on these pages. The principal hall is to be known as the "Winthrop Hall," a subsidiary building as the "Hackett Hall." The name of the University's great benefactor will thus be doubly commemorated.

Another considerable benefaction came the way of the University in 1927, in the shape of £60,000 bequeathed to it by Mr. R. J. Gledden. It is hoped that the example set by these two public-spirited men will be followed by many wealthy citizens.



Court of Honour.

A notable recent expansion of the University has been the creation of a Faculty of Law, with a Professor at its head. Another event, long overdue, was the establishment of a Chair of Education; yet another was the division of the Department of Physics and Mathematics into two departments, with the consequent establishment of a Chair of Mathematics. The progress of the University may, perhaps, be indicated by the statement that, at the beginning of 1913, the teaching staff consisted of eleven persons; at the end of 1928, of 63 persons. (The latter figure includes a number of lecturers who give only part of their time to the University.) The number of students enrolled has this year reached for the first time a total of five hundred.

Perhaps too much has been made, in this brief sketch, of the impoverishment of the young University. Even in these days, when elaborate equipment is thought urgently

necessary for scientific work, it remains true that the greatness of a University consists not in any material things, but in the spirit which animates its teachers and its students. Unless a disinterested love of learning inspires its activities, it will be only the simulacrum of a University. The University to-day is filled with hopefulness. Looking back —not without some just pride—on difficulties overcome and hardships endured, it looks forward to a life of increasing usefulness to the community. Knowing that stagnation means decay, it asks only for leave to grow and to press forward with its task—the twofold task of all Universities: the advancement of learning and the ennoblement of life.

XXV: FIGHTING FOR THE EMPIRE.

HE men and women of Western Australia have taken part in two of the wars of the Empire.

To South Africa during 1899-1902 went volunteers making up one infantry and nine mounted infantry units—in all 64 officers and 1,167 other ranks, together with 1,179 horses.

Coming into action for the first time on February 9th, 1900, at Slingersfontein, Cape Colony, the troops were subsequently engaged in many of the actions leading to the capture of Johannesburg, Bloemfontein, and Pretoria. Then followed two years of arduous work with flying columns organised to cope with the guerilla system of warfare instituted by the Boers after the loss of their capital cities. Judged by more recent standards, the fighting encountered in this campaign was not severe, nevertheless there were losses amounting to 40 by death and 86 by wounds.

South African Soldiers' Memorial, in King's Park.

The services then rendered were worthy of the State, and highly creditable to the individuals, the following honours being awarded to Western Australians :—1 V.C., 2 C.B., 7 D.S.O., 8 D.C.M., and three additional Mentions in Despatches.

During the Great War of 1914-18 Western Australia's contributions in men and money exceeded, on a population basis, that of any of the Eastern States. In all some 32,028

men and women enlisted. Of these, 8,042 were native born, the balance being almost wholly arrivals from the United Kingdom and other parts of Australia.

Soon after the outbreak of hostilities training camps were established at Blackboy Hill, Claremont, Rockingham, and other centres. Until the middle of 1916 the bulk of the troops despatched were in organised, equipped and partially trained bodies. Thereafter monthly drafts reinforced units already in the field. The last of these arrived at Cape Town coincident with the signing of the armistice and was turned back.

The routes followed by the marine transports varied. That common to the earlier days was *via* the Suez Canal and ports, but as the submarine menace grew, departures were made in the direction of the Cape of Good Hope and up the West Coast of Africa, or through the Panama Canal north to Halifax and thence across the Atlantic.

The units raised and recruited by Western Australia were :

Australian Flying Corps.†
10th Light Horse Regiment.
36th (Australian) Heavy Artillery Group.†
8th Battery, 3rd Field Artillery Brigade.
1st Divisional Ammunition Column.†
3rd Field Company, Engineers.†
6th Field Company, Engineers.†
1st Divisional Signal Company.†
3rd Divisional Signal Company.†
Australian and New Zealand Wireless Signal Squadron.†
3rd Light Railway Operating Company.
4th Broad Gauge Railway Operating Company.†
3rd Mining Battalion.†
6th Tunnelling Company.
11th Infantry Battalion.
12th Infantry Battalion (one Company).
16th Infantry Battalion (part from South Australia).
28th Infantry Battalion.
32nd Infantry Battalion (two Companies).
44th Infantry Battalion.
51st Infantry Battalion (organised in Egypt).
3rd Pioneer Battalion.†
4th Company Army Service Corps.†
16th Company Army Service Corps.
2nd Depot Unit of Supply.
7th Depot Unit of Supply.
4th Squadron, Australian Remount Unit.
4th Field Ambulance.†
2nd Australian Stationary Hospital.

† Part of.

In addition, reinforcements were supplied to some units raised elsewhere in the Commonwealth, and a considerable number of ladies volunteered for the nursing services in connection with hospitals and hospital ships.

A further exodus was entailed by the calling up of the Imperial Reservists residing in the State at the time of the outbreak of war. These were rapidly mobilised at Fremantle and despatched to England in special transports

This sketch indicates the commanding position of the State War Memorial on Mount Eliza, King's Park, overlooking a large portion of the city, and South Perth, as well as Perth and Melville Waters. The memorial is now in course of erection.

by arrangement with the Home Government. There was also a good response to the call for munition workers to be drawn from amongst those men who were skilled but had failed to qualify for service with the troops. These last proceeded abroad under engagement and were repatriated soon after the fighting ceased.

For the purposes of home defence, and for the guarding of important points and the support of defended ports, the youthful Citizen Forces supplied the personnel. These quickly acquired proficiency in training. However, few of these lads remained for any length of time at this duty,

but were rapidly absorbed into the Expeditionary Force—their places being taken by others as they reached the requisite age. As the adjoining seas were cleared of enemy naval raiders the requirements of garrison duty were considerably reduced.

Enemy aliens resident in the community, or engaged on foreign vessels detained in ports, were interned under guard at Rottnest Island, whence they were subsequently transferred to one of the Eastern States.

The first troops raised for the Australian Imperial Force entered Blackboy Hill Camp on the 17th August, 1914, and organised units embarked on the transports "Ascanius" and "Medic" at Fremantle on the 2nd of the following November. Proceeding to Egypt, where the Australians and New Zealanders were trained together as one army corps under Sir William Birdwood, the first contact with the enemy was gained at the historic landing on the Gallipoli Peninsula on the 25th April, 1915.

The 11th and 12th Battalions were included in the covering force which gained the shore at dawn on that date and were joined later in the day by the 16th Battalion and subsequently by the 8th Battery and other units. A few weeks later, when reinforcements were urgently required, the 10th Light Horse Regiment arrived, but without their horses, for which no use or cover could be found in such confined and rugged country. These troops, joined in September by the 28th Battalion, took part in all the fighting connected with the defence of Anzac and the battle of Sari Bair, and were amongst the last to withdraw when the evacuation took place during the night of the 19th-20th of the following December.

The casualties suffered by the Western Australian troops in this campaign amounted to about 2,500 officers and men. To Lieutenant Hugo Throssell, of the 10th Light Horse Regiment, who was noted for a deed of exceptional gallantry at Hill 60 on the 29th August, fell the honour of being the first Western Australian to be awarded the Victoria Cross in this war.

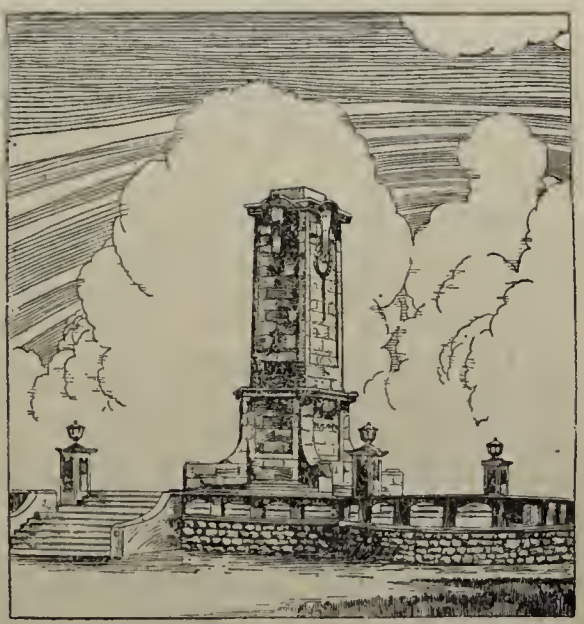
After the departure from the Peninsula the Australians were again concentrated in Egypt, where they took part in the scheme for its defence against an expected invasion

via the Sinai Peninsula. Here they were re-organised and joined by the 32nd Battalion. A further battalion, the 51st, was formed from the surplus reinforcements.

By March, 1916, the Australian Imperial Force had grown to one mounted division and five infantry divisions. A new phase of the war was entered upon. The infantry began to embark for France and Belgium, whilst the cavalry were destined for the conquest of Palestine.

With the cavalry went the 10th Light Horse Regiment which, during the three years that elapsed before its return home, distinguished itself in the battles and actions at Rumani, Maghdaba-Ratah, Gaza-Beersheba, El Mughar, Nebi Samwill, Jordan Valley, Megiddo, and Sharon. It was also in the van at the capture of Jerusalem, and was the first to enter, and receive the surrender of, Damascus. The last duty of the regiment was in connection with the revolutionary outbreak in Egypt early in 1919.

Arriving in Europe in the early spring of 1916, the Western Australian artillery and infantry, together with the concomitant auxiliary and administrative troops, experienced three months of trench warfare near the border of Belgium and were then moved south to the Somme area. They fought in the great battle which, opening on the 1st July, was not closed until nearly five months later and involved them in heavy casualties.



The War Memorial at Fremantle, completed in 1928. On a high hill, it is an outstanding object, plainly visible from far out at sea.

About this time the 44th Battalion joined the corps after several months' training in England. Miners and Tunnellers also arrived and were engaged near Nieuport, Lens, and Arras. The heavy artillery had been with the British Army in front of Vimy Ridge.

The winter of 1916-17 was of unusual severity and presaged a year of hard battles, in every one of which Western Australians fought and shared great distinction. Beginning with the major engagement of Bullecourt, before the following Christmas there had been fought the battles of Messines, Menin Road, Polygon Wood, Broodseinde, Poelcapelle, and Passchendaele.

Again winter intervened. All the units were rested and re-organised in preparation for the great German counter-attack which was expected as the result of the collapse of Russia and the consequent accretion to the enemy forces on the western front. The attack was checked in the battles at Hazebrouck, Villers Bretonneux, and Hamel. In the subsequent "advance to victory" all Australians were conjoined in the great fights at Amiens, Mont St. Quentin, Hindenburg Line, Epehy, St. Quentin Canal, and Beaurevoir.

The arrival of the armistice found the Australians in reserve, whence they moved forward to the neighbourhood of Charleroi in Belgium. There they were halted for some time and from that point were gradually returned to Australia.

Western Australians were also to be found in other theatres of war and in the British, Canadian, and South African Forces. They were heard of at Salonica, in Mesopotamia, in India, in North Russia, at the capture of the German possessions in the Pacific, with the Australian Navy at the destruction of the "Emden," and also with the Grand Fleet in the North Sea. Even with Dunsterville's Force to the Caspian Sea we are told of one who, riding a horse equipped with nothing but a rope, for eight hours covered a retirement with the aid of a Lewis gun which he carried under his arm when the weapon was not in action.

His Majesty the King was pleased to grant general officer's rank to six Western Australians, and to Lieut.-General Sir J. J. Talbot Hobbs, K.C.B., K.C.M.G., fell the good fortune to command the whole of the Australian Corps during portion of 1918-19. Victoria Crosses were conferred upon eleven and, in addition, a great many were invested with the insignia of various orders of chivalry and with medals of honour.

Some 6,000 citizens of this State were either killed or died of wounds during the whole of the war. Apart from the loss of 2,500 in the 1915 campaign, the total casualties in the fighting of the three later years was between 14,000 and 15,000. Local Memorials to the Fallen have been erected in many parts of the State. The principal Monument, situated in the King's Park, Perth, is nearing completion.

With the cessation of hostilities the war effort of the community did not terminate. The great work of repatriating over 20,000 men and women, many of whom were wounded or sick, occupied several years. Beyond returning people to the place of their enlistment repatriation entailed their re-absorption into the professional, commercial, and industrial life of the State. The principal agent was the Repatriation Commission, established by the Commonwealth Government. This body organised hospitals for the continued treatment of the sick and wounded ; vocational classes for the teaching of business and trades, and administered the pension system which, planned on a liberal scale, involves to-day within the State an annual expenditure of some £750,000. Another of the Commission's activities was the care and education of the orphans. A bequest made by Sir Samuel McCaughey, of New South Wales, has been the principal source of the means to promote the welfare of 1,366 children, 630 of whom are still at secondary schools undergoing vocational training, or at the University.

To provide homes for those who had married abroad, or were desirous of marrying, the War Service Homes Commission granted advances repayable at low interest over a period of some 25 to 30 years.

The State Government's share in the post-bellum effort was to purchase estates and throw open new lands to sailors or soldiers desiring to follow or resume agricultural pursuits. This great scheme absorbed about five and three-quarters millions of capital, but to-day nearly 3,500 settlers owe the possession of good farms and a comfortable living to its conception.

These meritorious activities resulted also in the creation of several societies who voluntarily charged themselves with the duty of assisting wherever and whenever possible.

From a portrait by G. McGregor Whyte.

THE CHAPLAIN GENERAL OF THE A.I.F.
ARCHBISHOP OF PERTH.
HIS GRACE, CHARLES OWEN LEAVER RILEY. D.D., LL.D., O.B.E., V.D.

Born at Birmingham, England, on the 26th May, 1854, son of the late Rev. Lawrence W. Riley, M.A., Vicar of Saint Cross, Knutsford. Educated at Owen's College, Manchester, and Caius College, Cambridge.

Appointed Bishop of Perth in 1894, Archbishop of Perth and Metropolitan in 1914 on the formation of the Province of Western Australia.

Chancellor of the University of Western Australia from 1916 to 1922.

Grand Master of the Order of Freemasons, from 1902 until his death.

Early in 1929 His Grace announced his intention, on account of failing health, to resign the office of Archbishop of Perth and Metropolitan of the Province of Western Australia in July, but death intervened. He passed away at Bishop's House, Perth, on June 23, after giving to the Church thirty-five and a half years of dutiful devotion and capable administration; and to the community an example of self-denying public service unexcelled in the history of the first century of Western Australia.

Amongst these were the various local Repatriation Committees, the Red Cross Society, the Soldiers' Welcome Committee, and the Legacy Club, which lends a helping hand to the orphan after he or she leaves the school or University.

Standing behind these organisations, and providing the means for the perpetuation of the spirit of comradeship of the war, and for the continuance of patriotic service, is the Western Australian Branch of the Returned Sailors and Soldiers' Imperial League of Australia. This Branch has an active membership approaching 6,000 and possesses a monumental record of good work. Not the least of its endeavours has been in the direction of assisting the ex-service immigrant from the British Isles in establishing his new home.

XXVI: THE SPORT OF KINGS.

ON OCTOBER 2, 1833, four years after the Colony was proclaimed, the first race meeting was held on a course about a mile and a half from Fremantle. It is described as being "on a slightly undulating plain, skirting the sea and the adjoining hills, which afford a full view of the course." The *Gazette*, of a few days later, says :

> As the origin of racing in the Colony will probably be interesting to future chronologists we feel it our duty to record that the sporting world are indebted to Captain Taylor of the "Helen," who has lately imported a number of Timor ponies, aided by Mr. C. Smith and Mr. I. Weavel, for the institution of an amusement calculated to excite a considerable emulation among the breeders and importers of horses.

The first race at this historic meeting was contested by seven ponies, and won by Tinker, owned by a Mr. Solomon. Among owners represented were two whose descendants later on became prominent on the Western Australian turf : Mr. George Leake, who was a chairman of the W.A. Turf Club, and Mr. Henry Leeder, one of the founders of the Northam Race Club, with which he was associated for more than 50 years. The stake for the initial event was a subscription purse of five sovereigns. Happily, there was no controlling organisation to restrict originality in nomenclature, and one of the competitors was named "More in Sorrow than in Anger."

At the second meeting in April, 1834, Mr. S. G. Henty produced a chestnut horse named Jack in such good condition that he easily beat all opposed to him, and disheartened other sportsmen, whose pioneering activities did not permit of the training of racehorses. Two and a half years elapsed before the sport was resumed. The venue was then changed from Fremantle to Guildford, where ploughing matches were alternated with races promoted to encourage the raising of thoroughbreds. Only

two breeders were represented—Sir James Stirling and Mr. W. L. Brockman. The horse nominated by Mr. Brockman beat that owned by the Governor in the two events contested. Mr. Brockman was grandfather of Mr. Hugh Brockman, who won the Perth Cup of 1912 with Sparkle.

On the fifteenth anniversary of the foundation of the Colony the first race meeting was held in Perth. The course was either at the Limekilns, beyond Subiaco, or where the beautiful Queen's Gardens now are at the foot of Hay Street East. At this fixture the Town Plate, an event that subsequently became one of the most important in the

Perth Race Course, 1890.

racing calendar, was inaugurated. Thoroughbreds of all ages were eligible at weight for age, and the race was run in heats. Wonder, a black stallion imported from England only a few months previously by Mr. Cole, was the winner.

The first race meeting in the country of which there is record was held at York in October, 1844. Among the prominent sportsmen of the period were men destined to play big parts in the life of Western Australia: including Messrs. Landor, Parker, Dempster, Woods, Burges, Meares, Von Bibra, and Lefroy. Periodically meetings were held at Perth and York, with now and then a gathering on the Fremantle course.

As the sport progressed it was deemed advisable to form a governing body, and this prompted the foundation of the West Australian Turf Club. The first race meeting on the site of the present premier course of the State, now one of the most modernly appointed and beautiful in Australia, was held in 1848, and four years later the Turf Club came into being. The first secretary was Mr. William John Clifton, who acted in an honorary capacity, and from his minutes the following is taken:—

> The object of the formation of a turf club was the improvement of the breed of horses in Western Australia and the establishment of regular race meetings under regulations applicable to the Colony, to be laid down by a committee of subscribers. Twenty names were enrolled as forming the club, with power to add to their number. The annual subscription was fixed at ten shillings with an entrance fee of £1. It was resolved that Messrs. W. A. Samford Hamersley, G. Eliot, S. P. Phillips, S. Burges, Charles Symmons, A. O'G. Lefroy, and Colonel Reeves be a committee for the drawing up of racing rules for the club; three to form a quorum. The committee was also empowered to make all further arrangements with reference to a racecourse; and for the club's first race meeting.

Less than a year after the formation of the W.A. Turf Club the first Queen's Plate was run. It was framed with the object of testing the stamina, as well as the speed of thoroughbreds, and the distance was three miles. It was one of the chief events at race meetings on the Perth course during a period of 45 years. The first carried a stake of £50 and the last was worth £750. That great galloper, Le Var, who, later on, proved a progenitor of many fine horses, won the last Queen's Plate which was run in 1898. Among notable winners of the event were Victorian, West Australian, Hinda, The Count, and Flemington: the last four carrying the colours of the late Sir Henry Parker.

It was late in the fifties that Bunbury became a racing centre, and a year later Busselton, then called The Vasse, formed a club. Among those then prominent at South-West meetings as breeders and owners were several whose names are perpetuated in the sporting world of to-day as well as in other walks of life: Messrs. J. Forrest, W. D. Mitchell (father of Sir James Mitchell), Hester, Locke, Heppingstone, and T. Little.

In April, 1862, the Victoria Racing Club was formed at Geraldton and the first Victoria Cup was held in February, 1863. It was worth £25 and was won by a mare famous in her day named Sultana. She was ridden by her owner, Mr. F. du Boulay. At Irwin a race meeting was held in 1864. In the spring of 1865 an inaugural meeting was held at Toodyay, then called Newcastle. Two years later the pioneering pastoralists of the North started racing at Roebourne, the Messrs. McLeod, Withnell, McRae, and Fauntleroy being the moving spirits. The chief race carried a stake of £15 and it was won by a mare named Miss Georgie, who was owned by Mr. A. E. Anderson. From that time, as settlement spread and fresh centres were created, race clubs came into existence all over the State, to the end that there is now scarcely a town in the agricultural, mining, pastoral, and timber areas that does not conduct occasional race meetings.

In the seventies the pure amateurism of horse racing in Western Australia was ended by the setting up of professional trainers and jockeys. Up to that stage, and for quite a long time afterwards, sportsmen prepared and rode their own horses. Great riders included Messrs. Joseph Lockyer, Kenneth Brown, S. H. Parker (afterwards Sir Henry Parker, Chief Justice of the State), George Parker, James Corbett, H. Woolhouse, Chitty, Logue, and W. Woolhouse. Sir Henry Parker was a most vigorous horseman, and his sequence of four wins of Queen's Plates was mainly due to his exceptional horsemanship. Amateur trainers were also notable, one of the most successful being Mr. E. T. Hooley, who afterwards became Chairman of the W.A. Turf Club. The first prominent professional trainer and jockey was George Towton, known on the turf as "King George," so remarkably did he, for a time, dominate the racing world. His first big success was in 1883, when Lowlander won the Queen's Plate, and later on he took the big races with horses which included Telephone and Duration.

Most of the best horses that had been bred in the State until well into the eighties had been got by stallions imported from England, but some sires were brought from the Eastern States. Owners of thoroughbreds did not

follow the occupation with the object solely of racing in this State. Studs were established in the South-West and the Midlands, and away in the northern pastoral areas as well as the Great Southern districts. The Messrs. Hassell bred some splendid horses on a station to the east of Albany, their principal sire being the English bred Ebony. From these studs stock were shipped to India and Mauritius, and at one period a big trade was carried on. During the present century, however, the business has not been largely exploited, sheep and wool being more profitable. To furnish horses for the race tracks importations from the Eastern States began to increase forty years ago, and annually there are brought here from twenty to thirty yearlings mostly bred in New South Wales. Few, however, find their ways to the studs excepting the mares whose progeny, resultant from matings mostly with English bred sires, give to the turf some very creditable performers.

The richer prizes offered in the more populous Eastern States have always been a deterrent to the turf in Western Australia. Any thoroughbred of outstanding quality is shipped to Melbourne, and quite a number have won races of the highest value. With few exceptions these money makers were bred in the Eastern States and brought here as yearlings. They include champions in Blue Spec, Mistico, Lilypond, Eurythmic, Easingwold, and Maple. Some bred in Western Australia have done well on Melbourne, Adelaide, and Sydney tracks, perhaps the most notable being Maoriland, a mare bred in the Northam district who was by Dixie Land from Hinemoa. The late Mr. Henry Leeder raced her on Victorian courses, and she proved to be the best middle distance performer of her time in that State. In the early nineties a colt got in Victoria by Wellington but foaled in the South-West of this State and named The Duke, created a sensation when at the carnival meetings of the W.A. Turf Club he won the Town Plate, the Queen's Plate and the Perth Cup. A decade later he won a three miles steeplechase at Flemington.

The first fourteen years of this century saw horse racing in Western Australia at its zenith. Like the earliest colonists, the pioneers of the goldfields sought their chief

pleasure in the sport. With remarkable rapidity race courses were laid out at Coolgardie, Kalgoorlie, and Boulder. The two latter were wonderful in their settings and appointments, and on them some of the best horses Australia has produced were ridden by jockeys whose fame has since become world-wide. The first goldfields

The Grand Stand, Perth, on Cup Day, 1929.

meeting was held at Coolgardie in the early spring of 1896 and the Cup race was won by Primrose, a mare bred by Mr. Morton Locke near Busselton. She was by Isonomy, a stallion brought from the Eastern States. So great was the boom in horse racing on the Eastern Goldfields that it had never been equalled in Australia. In fact the turf in the metropolitan area paled in comparison. The Kalgoorlie Club, in 1900, was the first organisation to set aside a stake of £1,000 for a horse race in Western Australia. Since the decline of the goldfields the race meetings there are of lesser importance, and the beautiful race courses are mostly regarded as public parks.

The principal race held in Western Australia is the Perth Cup. It was instituted in 1879, but until 1887 was known as the Metropolitan Handicap. Some horses famous in Australian turf history have won it, though comparatively

its monetary value has not been great. On January 1 of this year it was won by a New Zealand bred horse named Jemidar, and the stakes for the placed horses were £2,500. During the four days of the carnival the stakes approximated £14,350, the greatest amount of money so far set aside for a race meeting in the State. In the earlier history of the Perth Cup horses bred in Western Australia were mostly successful, but during this century very few of them have taken the coveted prize.

The control of the turf is vested in a committee elected by the 400 odd members of the W.A. Turf Club. Mr. E. Lee Steere is the present Chairman. Its administrative powers are great. No sports' committee nor club can hold a horse race in the State without the permission of this organisation, whose authority is given by Act of Parliament passed in 1917. Limitations to the number of race meetings held within the metropolitan area are fixed by that Act, and the number held on the premier course each year varies from 21 to 24. The sport is well governed, stipendiary stewards aiding the Committee in its control. Each year it makes large contributions to public charities.

In another branch of equestrian sport Western Australia is pre-eminent amongst the States of the Commonwealth. For the first time in the British Empire trotting races were conducted at night under electric light in Perth. Prior to 1910 trotting was confined to agricultural shows and unregistered race courses. In that year a band of enthusiasts, led by Mr. James Brennan, established the W.A. Trotting Association. For some years trotting meetings were held in the afternoons, clashing with the galloping fixtures, but at the beginning of 1914 night racing under electric light was instituted on the grounds of the W.A. Cricket Association. The war interrupted the development of the sport, but of later years its popularity with the public has been pronounced. Trotting horses of the highest quality have been imported from America, New Zealand, and the Eastern States.

During the first year after the introduction of night racing the amount given away in prizes totalled £3,500; last year £31,445 was distributed on the metropolitan courses alone, and in the fourteen years of operation the

stakes have totalled nearly £350,000. In Perth and Fremantle there are fifty-two trotting meetings a year, the profits of seven being devoted to charity. There are also trotting clubs on the Eastern Goldfields and in many of the agricultural districts, and the stimulus given to horse breeding has resulted in the production locally of a very fine type of light harness horse. Australasian championship contests promoted in 1925 and 1926 attracted almost world-wide attention.

Incidental to the development of the sport, the leasing by the Trotting Association of the W.A. Cricket Association ground has been of enormous financial benefit to the latter organisation, enabling it to cater adequately for the requirements of that ancient game, and thus hastening the time when Western Australia may hope to vie in the cricket field with the older established Eastern States. The Trotting Association, having out-grown the accommodation at these grounds, is now completing the construction of a new course, on the purchase and improvement of which it is spending nearly £150,000. It will be unique amongst the trotting courses of Australia. The exceptional success that has attended trotting in Western Australia is probably chiefly due to climatic conditions, the evenings, during a great portion of the year, being ideally suited to outdoor enjoyment. Adequate control and the absence of proprietary interests have been important factors in attracting public patronage.

On both racing and trotting courses the use of the totalisator is sanctioned by law, and bookmakers—registered by the respective authorities—are permitted to ply their calling.

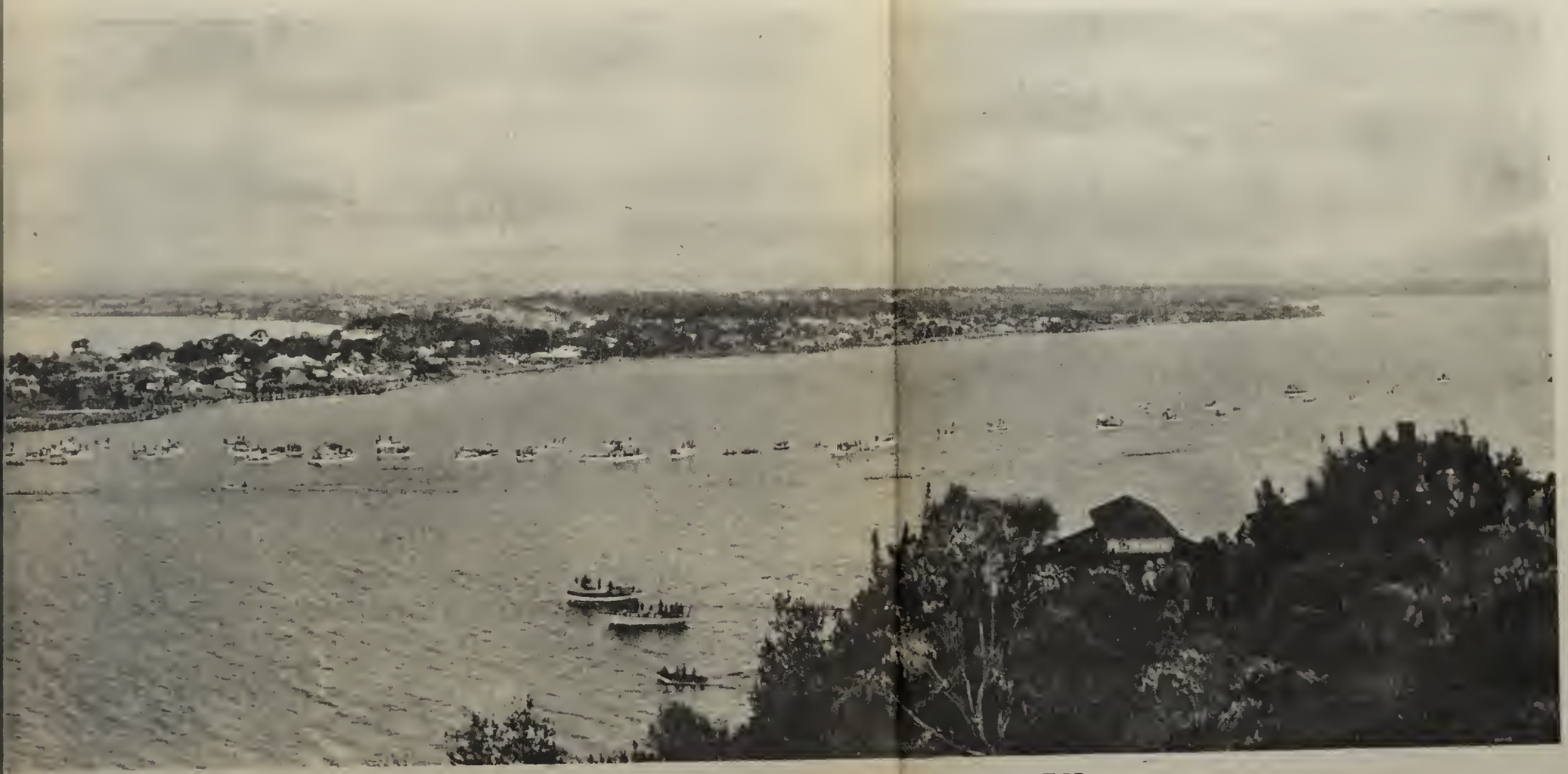
XXVII: THE SWAN RIVER.

IT IS a reproach to Perth people that to-day there are more black swans to be seen on the Thames than on the Swan River. Less favourable natural conditions are counterbalanced by the care devoted to the birds by the lock-keepers, and the officers of the Vintners' Company. Under a charter half as old as Time, the Vintners share with the King and the Dyers' Company the privilege of keeping swans on England's most beautiful river, and from time to time have imported black swans from Western Australia. They would like more, but the birds now are scarce and difficult to obtain. Twenty years ago they were still numerous in the neighbourhood of Perth, their feeding ground being close to the brewery and the Old Men's Home at the bend of Mount's Bay Road. Perhaps the dissolution of the happy juxtaposition of these two institutions has been responsible for a lessened care of the swans and a regrettable decrease in their numbers. If some local organisation, armed with due authority, could institute here the ceremonial Swan Voyage that has survived on the Thames since ancient Britons rowed in coracles and clothed themselves in woad, and provide for the birds the same attention as is afforded there, they might return again.

The value of the river as a factor in transport was a first cause of the establishment of the Swan River settlement. In 1827 Stirling explored the river so far as it is navigable by small boats, to Ellen's Brook in the Upper Swan, nearly 36 miles from the sea, and when the time came for the selection of a seat of government the only question to be decided was : what spot on the river bank is most suitable ? Because of the comparatively short distance for which it is navigable, the Swan cannot be described as a great river. Even in Australia—a country notoriously deficient in commanding waterways—there are many others of greater volume, including several in the far northern portion of

PERTH WATER

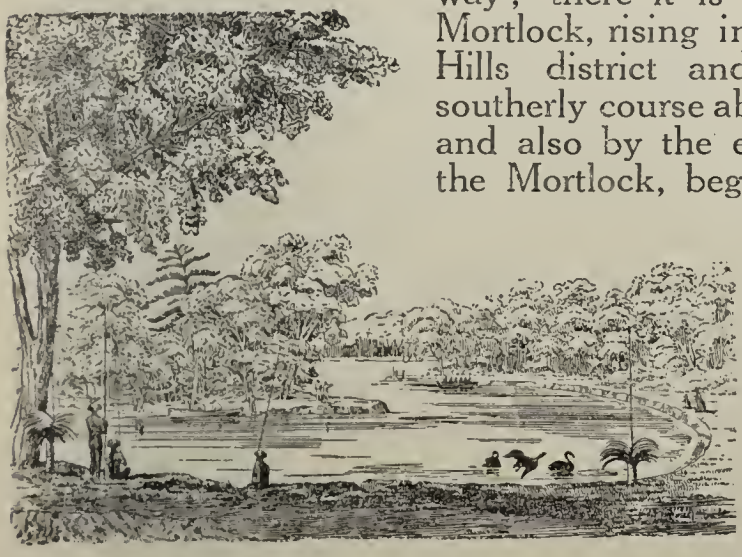
OF THE SWAN RIVER



THE NARROWS LEADING INTO MELVILLE WATER

Western Australia. But the Swan has qualities in which it excels any other river in Australia: qualities in which it has few rivals elsewhere in the world.

The Swan is fed by many tributaries. The Dale River has its origin east-south-east from Perth about fifty miles as the crow flies, and winds in a generally northerly direction some sixty miles to Northam, merging into the Avon on its way; there it is joined by the Mortlock, rising in the Wongan Hills district and travelling a southerly course about fifty miles, and also by the eastern arm of the Mortlock, beginning in the salt lake country around Cunderdin and flowing about thirty miles westward to mingle with the main stream. Thus reinforced, the Avon finds its way from Northam past Toodyay and by a tortuous route through the Darling Ranges, being joined on the western slopes by the Brockman River and the Gatta River (or Wooroloo Brook). Near Guildford the Swan is fed by the Darkin River and the Helena River, each taking its rise in the Darling Ranges and joining forces a mile to the east of the Mundaring Weir. And lastly the Canning, rising in the Darling Ranges thirty-five miles east-south-east of Perth, passes through the Kelmscott country and empties itself into Melville Water. Thus eleven smaller streams, their sources in some cases a hundred miles distant from each other, go to the making of the Swan.

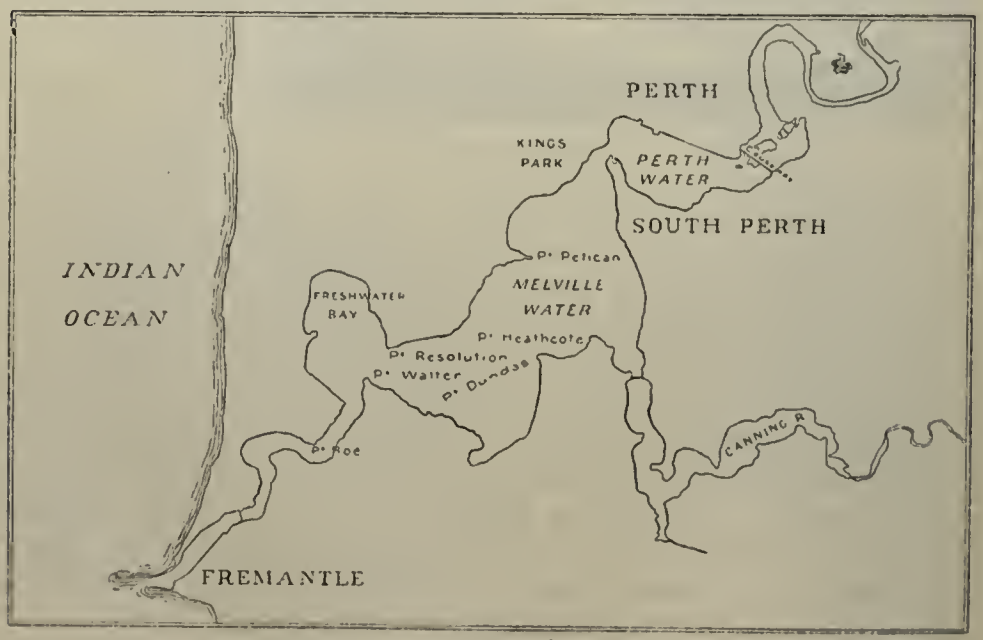


Swan River, thirty miles up, 1827.

At one time the river abounded in fish, but with the growth of population along its banks and extensive netting it now offers limited attractions to the angler. Large quantities of mullet are still netted; the delectable flounder may be caught in Freshwater Bay, kingfish, skipjack,

and tailer in Blackwall Reach and from Canning Bridge; crabs and prawns abound in the summer months. The enormous, seemingly inexhaustible, deposits of oyster shells in the river beds demonstrate that at some, perhaps remote, period these bivalves bred here even more extensively than in the northern rivers of New South Wales. What happened to them? A tenable theory is that on some occasion the mouth of the Swan became blocked so completely as to exclude the entrance of salt water from the sea. Then came a rush of fresh water from the hills causing the oysters to perish in one mighty cataclysm; one all-embracing havoc. From the earliest days of the city until the present time these long-dead shells have been dredged from the river to form useful, if somewhat primitive, roads and footpaths.

The accompanying chart shows the configuration of the Swan from Fremantle for a distance of about sixteen miles. Through and beyond Guildford, almost to the foothills, the river presents many scenes of surpassing beauty, though frequent shallows, and the absence of wide reaches,



detract from its utility. Near Guildford are several spots of romantic interest. On the high banks north of the railway bridge is a spring the waters of which gush from the heart of the hill and trickle through a tangle of rush and bracken to the river. It was here, according to

tradition, that Stirling replenished his water kegs during his journey of exploration in 1827, and soon after the foundation of the Colony he selected land in the district and named Woodbridge after his wife's birthplace, and Guildford, after the ancient capital of the County of Surrey, at that time represented by her father in the House of Commons.

In the ten-mile stretch between the Causeway and Pt. Roe are three magnificent sheets of open water: Perth Water, Melville Water, and Freshwater Bay. Melville Water alone has a maximum length along the centre of the river of about five miles, by a width of two and a half miles. It is a yachtsman's paradise, and in addition affords one of the best long straight courses for rowing races to be found in the Commonwealth. King's Park, near the finishing point, is a natural grandstand from which countless thousands of spectators may watch a race from start to finish.

At Point Walter a long narrow spit runs out into Freshwater Bay. Many years ago a channel was dredged through the shallows near Point Walter and a toll instituted, boats passing through it paying 2d. to save the long detour into the deep water of the Bay. Both the toll and the channel have long since disappeared. In the transport of heavy goods by tugs and barges direct from the ship's side at Fremantle to the wharves at Perth the river has proved of immense commercial value. The channel throughout is clearly defined by beacons and well lighted for night traffic. Dredging has been carried out where required, and jetty facilities are available at all points.

The Perth foreshore has been reclaimed for a width of several hundred yards and roads and recreation grounds have been laid down behind stone retaining walls. This work is still in progress. New channels are being formed, and additional land reclaimed, and islands are being built that will form conspicuous beauty spots in the immediate future. The planting of shade trees along the river highway has proceeded for years, and natural camping places have been improved at favoured spots on both sides of the river from the Causeway to the sea. Excursion steamers and power launches during week ends, and on summer evenings, provide welcome outings for perspiring citizens.

Always with unbroken water off one shore or the other, the Swan, in the neighbourhood of the city, is an ideal training ground for oarsmen. The University, situated between King's Park and Point Pelican, enjoys exceptional advantages in this respect, with the result that the crew from the Western Australia University, almost from its

Perth and Melville Waters from St. George's Terrace, 1839.

inception, achieved pride of place amongst the University crews of Australia. Western Australian oarsmen generally have more than held their own with competitors from the more populous States.

The pleasure boats on the Swan are of infinite variety. First in interest, perhaps not least in importance, is the home made tin dinghy, four to six feet long and about fifteen inches wide, in which young adventurers disport themselves and dream of the days when they shall "climb high mountains and sail rough seas." These boys swim like ducks, and the sinking of their frail crafts is a frequent and unimportant incident. Children of a larger growth are well catered for by yachting and boating clubs, of which the more important are the Royal Perth Yacht Club, the Perth Flying Squadron, the Mount's Bay Sailing Club, the Freshwater Bay Yacht Club, the Claremont Yacht Club, the W.A. Skiff Club, the Perth Dinghy Club, and the Australian Natives' Association Semi-Rater Sailing Club. Each of these has commodious premises, ideally situated on the water front, and promotes amateur races in their different classes during the long yachting season, extending

from early spring to late autumn. A few enthusiasts keep their boats in commission practically all the year round. Boats of many classes have from time to time journeyed to other parts of the Commonwealth to uphold the fame of the Swan, whilst a number of interstate contests have been fought out on its waters. Recently powerful speed boats have made their appearance, and this form of racing tends, with the spirit of the times, to increase in popularity.

It is sometimes suggested that the love of speed for speed's sake is levying a heavy toll on the votaries of river sport. Yachtsmen complain of increasing difficulty in securing crews, now that almost every young man has his motor bicycle, if not his motor car. The last few years have seen a decline in the number of registered yachts, but happily the club memberships are well maintained and the Saturday afternoon races are more numerous and more keenly contested than ever. It would be a tragedy indeed if the lure of speed, along even the most perfect roads, should draw the young men away from the river.

To the artist, the river is as full of moods as a human being. Lashed by heavy rains and sea-borne gales, it sometimes overflows its banks in almost impotent anger; in lighter humour spanking breezes stretch taut the canvases, careening crafts to the gunwales; and again in quiet and peaceful lethargy it suggests the "rapture of repose." Those who know and love the Swan can readily follow in fancy the delights of its first voyagers. Crossing —with some difficulty it may be assumed—the formidable bar of coral reef that partly obstructed its opening, they passed between low banks and tree-fringed beaches round Rocky Bay, beyond which, while the channel narrowed, the width from shore to shore grew greater, on past Bicton and Billy Goat Farm, between wooded hills to Blackwall Reach, emerging with surprised delight into what is now Freshwater Bay—a name early given to it because at many points along its beaches fresh water can be obtained almost at the river's edge, merely by scooping a hole in the sand. To the left towers a sandstone ridge, gradually sloping and curving to form Mosman's Bay—first named Samson Bay —flanked by Keane's Point. Round this promontory is Peppermint Grove, one of the most secluded and seductive

coves in the whole length of the river, the natural home of the heavy-leafed peppermint tree that must have recalled the weeping willows of English rivers. Further on, the banks rise again to the commanding heights of Osborne, and the water is deep and dark and tranquil.

Beyond the lands on which now nestles the delightful town of Claremont is another low, red, sandstone cliff extending to Point Resolution, with Point Walter opposite: to-day a port of call for river steamers and the happy rendezvous of yachtsmen and picnic parties. Surprise follows surprise as the immense space of Melville Water unfolds itself to the view, with a fascinatingly serrated northern shore extending as far as Crawley Spit and turning sharply inwards to form Crawley and Matilda Bays—the latter named after Mrs. Roe, the wife of the first Surveyor General—while to the south are Lucky Bay, Applecross, Frenchman's Bay, Point Heathcote (completely hiding the entrance to the Canning River) and Como and South Perth shores.

In all probability, half way through this inland sea, when the opening into the Canning was revealed, the question rose: to the right or to the left? On the answer depended the location of the capital city of a great State. The heights of Mt. Eliza—named by Stirling after the wife of Governor Darling—tree-capped and graceful in outline, a commanding feature in the landscape, decided the issue. Where the banks are high the waters are deep, and so the explorers passed the present sites of the University and Crawley baths and negotiated the narrows, leaving on their right Mill Point—first named Point Belches, after Captain Belches, one of the earliest marine surveyors in the Colony, but rechristened when the town's first flour mill was erected there. Encountering many shallows and muddy bottoms they came to shore beneath the great tuart trees, now gone, but which as recently as thirty years ago stretched their giant proportions sky-wards at the foot of Barrack Street: near the spot on which was soon to be founded a noble city, endowed almost beyond comparison by climate and surroundings, and destined to rival as a centre of commerce, of art, of learning, the proudest capitals of the southern hemisphere.

XXVIII: THE CITY OF PERTH.

PERTH was selected by Governor Stirling as the seat of Government for the Swan River settlement within a few weeks of the arrival of the "Parmelia." In his first dispatch to the Secretary of State, dated September 9, 1829, he wrote :

> The arrival of two other ships with settlers making it necessary to have locations prepared for them, I have been under the necessity of interrupting the general survey of the surrounding coast and country, for the purpose of laying out the town of Fremantle as a landing port, and also the town of Perth near the island on the Swan River, with a view to its being in the neighbourhood of those who may wish to cultivate the rich lands immediately above it on the river.

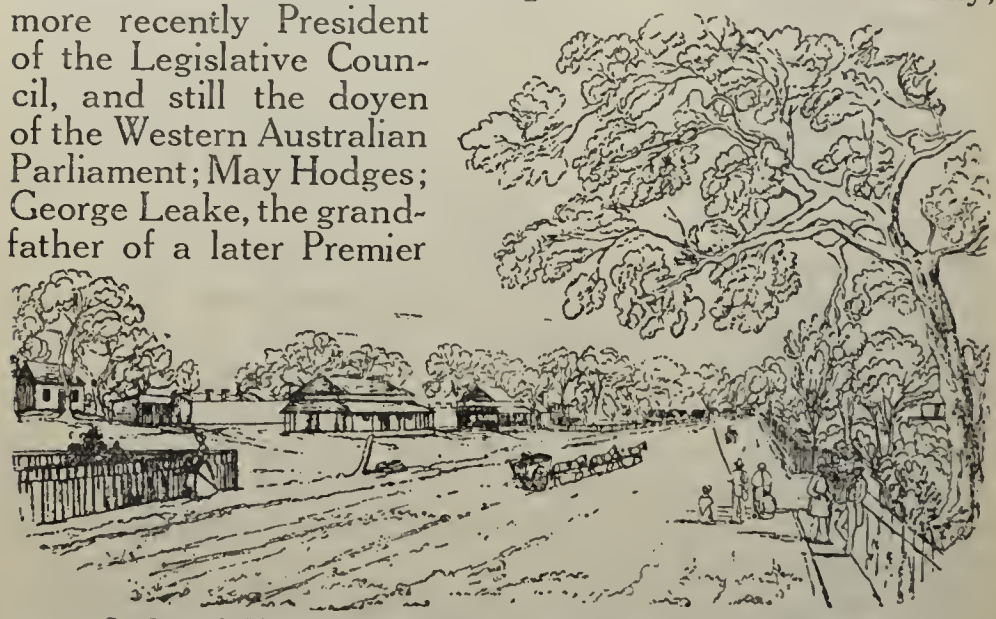
The island mentioned is Heirisson Island, named after Ensign Heirisson of the first French expedition. It is now intersected by the Causeway. The extent to which the proximity of Mt. Eliza influenced the Governor and his Surveyor General in the selection of the site cannot now be determined, but it is reasonable to suppose that the association of hill and river, which combine to make Perth one of the most attractive cities in the Commonwealth, was not lost upon them.

The formal foundation of the town took place on the 12th of August, 1829—the anniversary of the birthday of the reigning monarch, King George IV. The ceremony took the form of cutting down a large tree on a spot near the present right-of-way adjoining the Treasury buildings in Barrack Street, about midway between St. George's Terrace and Hay Street. Londoners, according to their place of residence or business, will claim about six spots—widely separated from each other—as being the centre of the world's greatest city ; Perth residents, with equal warrant, might select many

Coat of Arms of the City.

spots as being the centre of their young capital, but perhaps none has a stronger claim to the title than that on which the foundation ceremony was performed a hundred years ago.

In the following month the civil establishment was transferred from Fremantle to Perth, which thereupon became the capital of the Colony. Under regulations framed on the 28th of August, 1829, the first allotments in the townsite of Perth were disposed of on September 5. The purchasers —some in leasehold and some in fee simple—were: F. C. Irwin, the officer commanding the troops; Rev. J. B. Wittenoom, the Colonial Chaplain and the grandfather of Sir Edward Wittenoom, once Agent General for the Colony, more recently President of the Legislative Council, and still the doyen of the Western Australian Parliament; May Hodges; George Leake, the grandfather of a later Premier

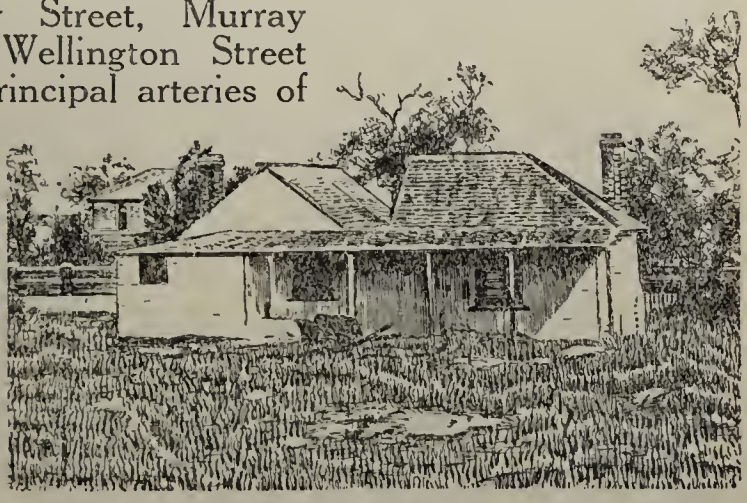


St. George's Terrace, 1832. From a drawing by Mr. C. W. Wittenoom.

of the State; and P. P. Smith. In the same year Perth blocks were either leased or sold to: J. S. Roe, Dr. Simmons, William Shaw, John Morrell, John Tichbon, Thomas Davis, William Hocking, Thomas Bannister, James Henty, James McDermott, Samuel Cox, Richard Jones, Hugh MacDonald, David Paterson, George Embleton, William Leeder, Henry Trigg, William Nairn, Robert M. Lyon, and C. Browne. The prestige that Perth—as the capital of the Colony—soon acquired over the older town of Fremantle is indicated by the fact that the only persons who took up allotments in the latter during 1829, under the

28th of August regulations, were William Lamb, John Hobbs, Lionel Samson, Thomas Bannister, and John Bateman. The names of Samson and Bateman have ever since been closely associated with Fremantle and with the commercial life of the State.

The problem facing the first surveyors of Perth was the laying out of a town on a narrow area between the river and the swamps. The latter lay to the north of Wellington Street, and were known as Lake Kingsford, Lake Thomson, Lake Poulett, and Stone's Lake, with Ti-tree Lagoon, an arm of the river, extending parallel with Wellington Street. Lake Kingsford occupied the low-lying land about the present central railway station, and to the west were Lakes Georgina, Sutherland, Henderson, and Irwin, the last-named being about the spot where Milligan Street crosses the railway line. These conditions dictated that the main thoroughfares must run east and west, and so St. George's Terrace, Hay Street, Murray Street, and Wellington Street became the principal arteries of early Perth, with an administrative centre composed of Government buildings and the church grouped between St. George's Terrace and Hay Street, and close by a reserve for botanical gardens in which were placed the Court House, and later Government House.



The first Post Office in Perth, in St. George's Terrace, East.

On June 5, 1830, an Act was passed (No. 1, Victoria No. 2) to provide for the management of roads, streets, and other internal communications within the settlement. This was the beginning of local government, and under that Act was set up the first authority for what is now the city of Perth. It took the form of a body of trustees, and consisted

of the Justices of the Peace resident in the town, and the proprietors of allotments held in fee simple therein. By an Act passed on the 14th of April, 1839, the trustees were empowered to make an assessment for the improvement of the town. In 1841 an Act " for the improvement of towns in the Colony " was passed, under which the Town Trust of Perth was established.

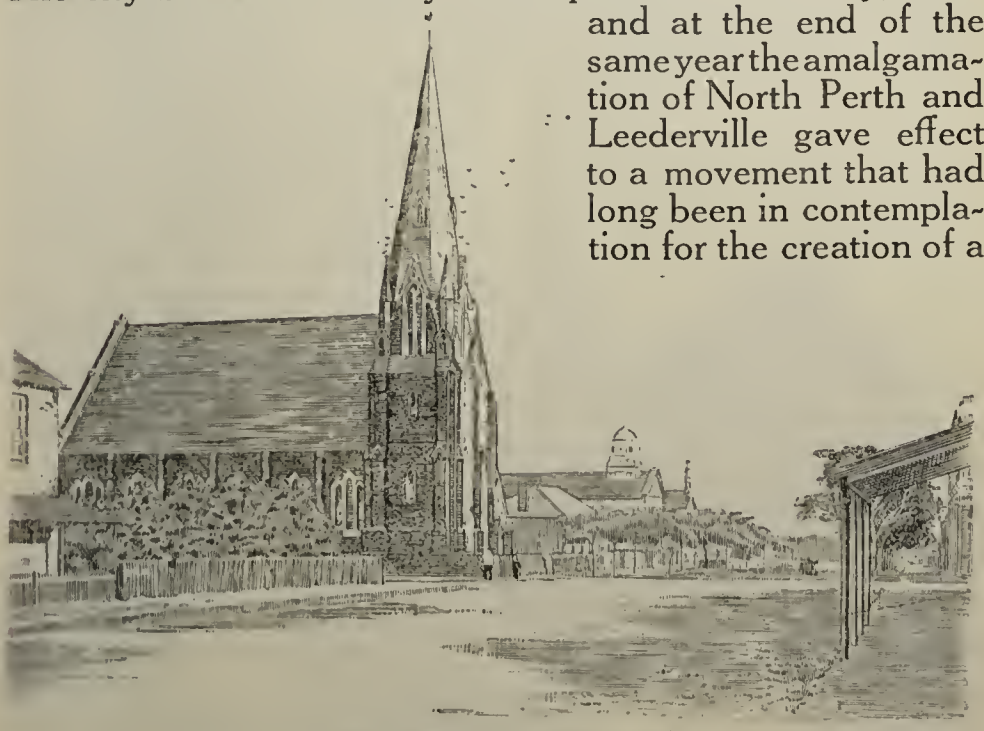
The first election to the Town Trust took place in February, 1842, the members being : Chairman, W. B. Andrews ; Committee, George Leake, James Purkis, Peter Broun, W. H. Drake, and Richard Jones. Three days after the election the first rate was levied for the purpose of forming a footpath in Hay Street, and it took the simple form of a charge of 20s. each on the owners or occupiers of allotments on the north side of Hay Street, and 10s. each on all other owners and occupiers. The Town Trust continued for more than fifteen years. From reports in the *Perth Gazette* of October 7, 1848, it is gathered that—

> At the meeting of the Perth Town Trust the principal subject for discussion was the road along St. George's Terrace, and the construction of the Causeway. The work was proceeding slowly, but difficulty was experienced in collecting sufficient money to pay for it. The credit balance in the hands of the Trust was 16s. 1½d.

In 1856, on the foundation of the Bishopric, Perth became a city, and two years later—on the 10th of December, 1858—was held the first meeting of the Perth City Council, the Councillors being : H. L. Cole (Chairman), B. Smith, T. Smith, T. Farrelly, C. King, and J. Farmaner. Six years later the city was divided into three wards, and on the 24th of May, 1867, the anniversary of the Queen's birthday was celebrated by the laying of the foundation stone of the Town Hall. The building took three years to complete, and was opened on June 1, 1870. On January 2 of the following year the city was incorporated as a municipality under the Act passed by the first Parliament under representative government. In June, 1873, steps were first taken to light the streets by night, lamp posts being erected in Hay Street and Howick Street (now the eastern portion of Hay Street from Barrack Street).

On the 3rd of June, 1879, the first sod was turned of the Fremantle to Guildford railway, and in the following year

Mr. (afterwards Sir George) Shenton was elected the first Mayor of Perth. In 1885 coal gas was first manufactured in Perth and sold for lighting purposes, and in 1889 the Perth water supply works were commenced. In 1897 the city was divided into five wards and in the same year the Perth City markets were opened. In January, 1899, the first sod was turned for the electric tramway along Hay Street and the first car ran in September of the same year. The city baths at Crawley were opened in February, 1914, and at the end of the same year the amalgamation of North Perth and Leederville gave effect to a movement that had long been in contemplation for the creation of a



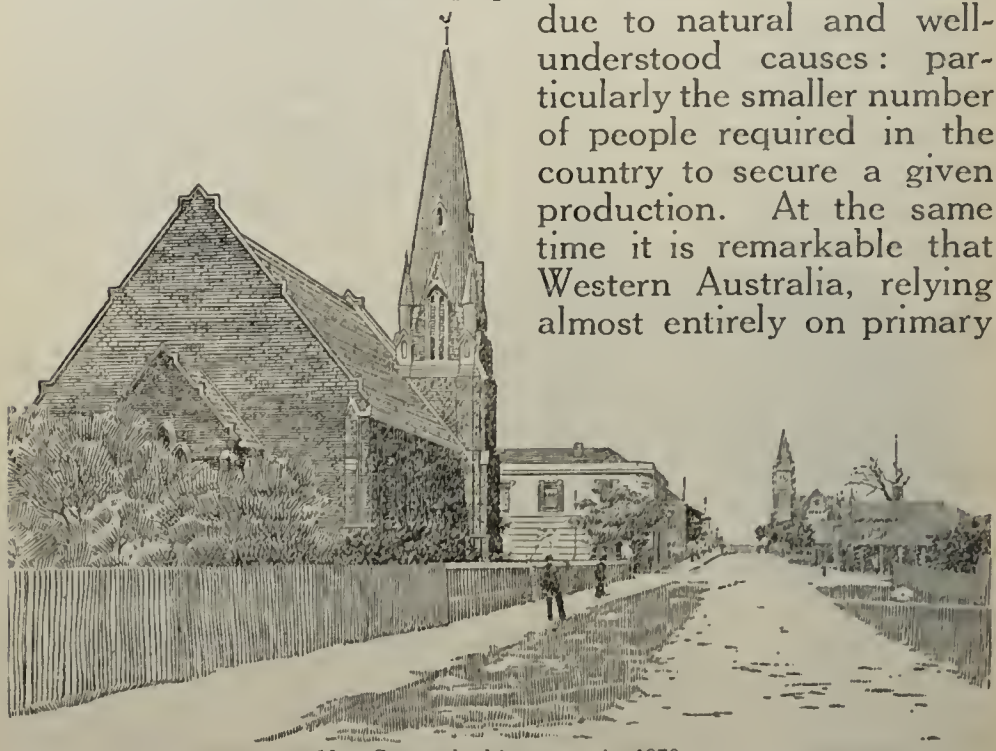
William Street, looking north, in 1870.

Greater Perth. In 1917 Monger's Lake was included in the city boundary and Victoria Park municipality came into the amalgamation. In the following year the Lime-kilns estate and the endowment lands were also included, and a road was opened to the ocean beach. In 1925, following an ineffectual attempt to determine a new site for the Town Hall, extensive structural alterations were made in the old building and the municipal offices and Council meeting place were transferred to a building in Murray Street.

Seventeen years ago, by the foresight of the Scaddan administration, land was reserved for public markets in Wellington Street, West Perth. Under the authority of

the Metropolitan Market Trust, commodious public markets of appropriate design, covering an area of six acres on this site, and costing some £170,000, were opened in June, 1929, a further ten acres being reserved for future extensions.

The area of the original city was 3,575 acres : it has now been extended to 14,439 acres. The growth of population of recent years has been astonishing in proportion to the increase in the number of people in the State generally. The tendency of metropolitan populations to expand much more rapidly than rural populations is world-wide, and due to natural and well-understood causes : particularly the smaller number of people required in the country to secure a given production. At the same time it is remarkable that Western Australia, relying almost entirely on primary



Hay Street, looking east, in 1870.

production, having few important secondary industries, and importing much of its manufactured requirements, should have so large a percentage of its people in the metropolitan area. This area includes a comparatively narrow strip running from Fremantle, twelve miles west of Perth, to Midland Junction about the same distance east, the city forming the centre. In 1871, when the Perth municipality was formed, the population of the city was 4,500 and of the Colony over 25,000. The suburbs then were almost non-existent and the towns of Fremantle and

Guildford contained few people. At the end of 1928 the population of the State was 405,908, of whom 196,251—or more than 48 per cent.—were in the metropolitan area.

The capital has great attractions, calculated to draw population. With the exception of a few hot, sticky days in the month of February the summer climate is pleasant, with cool sea breezes almost every afternoon, and generally cool nights. The winters are mild. There is plenty of heavy rain, and frequent days of bright sunshine ; autumn and spring are as near perfection as any earthly climate can attain. The situation of the city is ideal, and the view of Perth from the top of Mt. Eliza, with the river winding through it, and the tree-capped ranges in the background challenges comparison with the most beautiful cities in the old or the new world. There are sea and river beaches in abundance and within easy distance. Cottesloe Beach is safe and delightful for surfers and swimmers, and this year the City Council is opening up the new city beach, only about five miles from the Town Hall. Further afield are many delightful fishing and holiday resorts, including Mandurah, between Peel Inlet and the sea, Rockingham, near the site of the old town of Clarence, and Rottnest Island : Vlaming's Isle of Girls, with its chains of hills and lakes and sheltered swimming pools, declared by that early navigator to be the loveliest island in the southern seas. Golf courses, race courses, bowling greens, tennis courts, and cricket and football grounds are in abundance about the city and suburbs.

For the needs of its present inhabitants Perth is reasonably endowed with parks and reserves. Chief amongst these is King's Park of over a thousand acres on the top of Mt. Eliza, overlooking the river and the city. Much of its charm lies in the fact that a great deal of the native bush has been left undisturbed. The old trees remain and in the spring the entire park is a blaze of wild flowers, of endless variety and exquisite beauty. Good roads have been made for motor traffic. Bordering the main drive is an avenue of flowering gums—natives of the south-west corner of the State—which in the early summer present an entrancing picture of many hues and colours. Along the Princess May drive—named after Her Majesty the

THE FOUNDATION OF PERTH.

By permission of the artist, G. Pitt-Morison, Curator of W.A. Art Gallery.

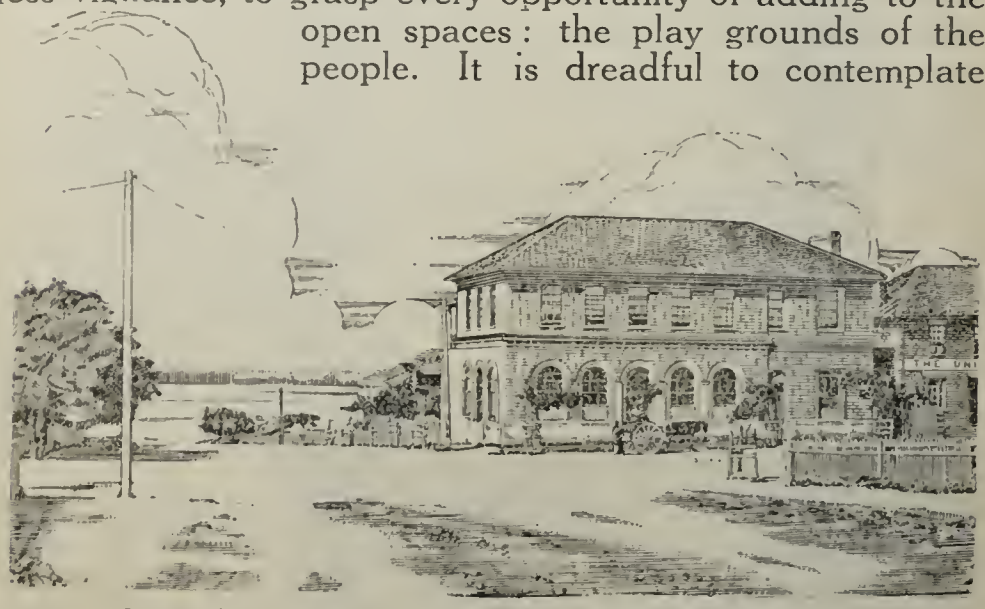
From left to right: Peter Broun, Lieut. J. S. Roe, the Military Guard, Capt. C. W. Fremantle ("Challenger"), Commander Mark Currie, Capt. Stirling reading proclamation; Capt. F. C. Irwin, and Capt. W. T. Dance ("Sulphur"). Mrs. Dance holding the axe.

Queen who opened it during her visit to Australia in 1901—are oaks grown from acorns obtained from the Home Park at Windsor, and these combine with plane trees to form an avenue of honour to sons of Western Australia who gave their lives in the great war. The Park is an asset of incalculable value to the citizens and to the State, and for its preservation and improvement credit is chiefly due to Sir Malcolm Fraser, who as Surveyor General set the land apart for public purposes, and to the three men who in succession have occupied the office of President of the Board of Control: Lord Forrest, Sir Winthrop Hackett, and the Hon. Arthur Lovekin, M.L.C., the present President.

Statue of Lord Forrest, by Sir Bertram Mackennal. Erected in King's Park near the junction of the main drive with the Princess May drive, the statue overlooks South Perth, the wide expanses of Perth and Melville Waters, and the Canning River.

Queen's Gardens at the other end of the city—not many years ago a brick kiln and then a rubbish tip—though only eight acres in extent, is one of the prettiest spots the eye could wish to rest upon, with its water lily ponds, perfectly kept lawns and gorgeous display of all the flowers in season. Of various sized reserves and playgrounds in Greater Perth there are upwards of fifty, aggregating an area of nearly 750 acres, whilst the endowment lands, lying chiefly between the city and the sea, contain nearly 4,000 acres. This grand total of 6,000 acres of reserves close to the city is no mean area, but it falls far short of ultimate requirements. This year the Government is setting apart and developing an area of 4,000 acres in the Darling Ranges near Swan View, within fifteen miles of the city, as a Centenary Park. Embracing much undulating jarrah forest country, and several natural waterfalls and impressive gorges, it is capable of translation into a park of rare beauty, and a wild flower reserve of singular attraction.

There is little reason to suppose that the tendency of population to congregate in the cities will disappear. Already one of Australia's capitals contains well over a million people. Perth will be far larger than that in another century, and it behoves this and successive generations, with ceaseless vigilance, to grasp every opportunity of adding to the open spaces: the play grounds of the people. It is dreadful to contemplate



Corner of Barrack Street and St. George's Terrace in the seventies.

what London would be without the many thousands of acres of park lands within its area and in the immediate neighbourhood, and for present purposes they are all too few.

In Perth there are no sky-scrapers. Like Adelaide, Melbourne, and Hobart, the city has adhered to the practice of raising local revenues by taxation on the annual rental value of property. In Sydney and Brisbane, where lands are rated on the unimproved capital value, the tendency has been to drive everything skywards. Whichever may be the sounder method as a matter of political economy, eleven-storey buildings do not add charm to the landscape. The number of buildings erected in the city of recent years gives some idea of the progress that is being made. In 1902 the value of new buildings erected was a little over a quarter of a million; in 1921 it exceeded half a million; and in each of the two last years it has been well over a million. The annual value of property for rateable purposes has increased from £712,000 in 1920, to £1,409,000

THE BUSINESS CENTRE OF PERTH FROM THE AIR, 1929.

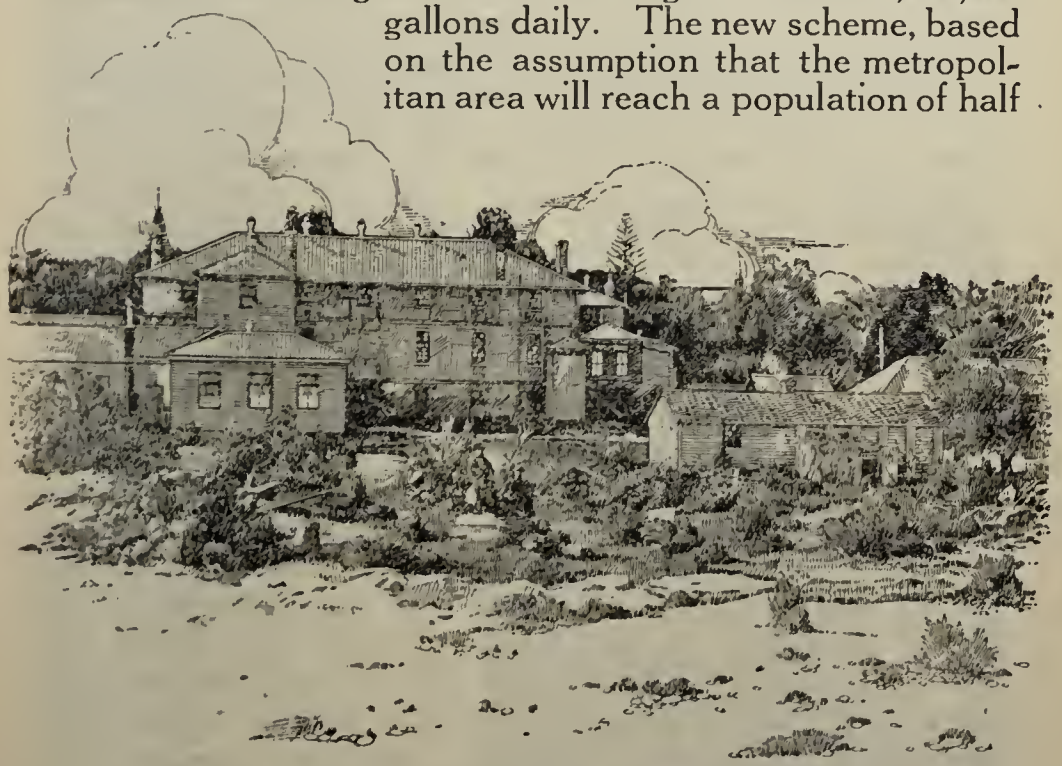
in 1928: a hundred per cent. increase in eight short years. The existence within the State of large deposits of granite and stone of high quality has facilitated the erection of buildings of enduring character and pleasing appearance.

Since 1900 the consumption of electricity in the city for lighting and power purposes has increased from 416,000 units to over 30,000,000 units, the charges on a sliding scale being from 3¾d. to 2d. for lighting and from 2d. to 1d. for power. From 1912 to 1928 the consumption of gas, largely for cooking purposes, has grown from 70,000,000 cubic feet to over 260,000,000 cubic feet, the price charged being from 7s. 11d. to 6s. 8d. per

Corner of Barrack Street and St. George's Terrace in 1929.

thousand cubic feet. This rapid expansion in the consumption of gas and electricity indicates a radical change in the lives of the people, the general adoption of labour saving appliances in the homes, and a substantial upward movement in the standard of comfort.

Perth lies in an artesian basin, and in the past much of the domestic water supply has been drawn from the bowels of the earth. Coming from a great depth it reaches the surface at a high temperature, and slightly mineralised. Whilst potable and healthy for drinking purposes, it frequently proved destructive to delicate garden plants. A hills' supply from the Helena River has been drawn upon for many years, and the construction of a large reservoir in the Canning River has now been undertaken. Already the water consumed annually in the city exceeds three thousand million gallons—an average of over 8,000,000 gallons daily. The new scheme, based on the assumption that the metropolitan area will reach a population of half a million in 26 years and that the consumption will be fifty gallons per head per day, is expected to involve an outlay of £1,250,000 within the next seven years, and to permit of steady future expansion to meet increasing needs for many years to come. Already much of the metropolitan area is sewered, and a scheme has been propounded to deal with the remainder, with outlets into the sea.

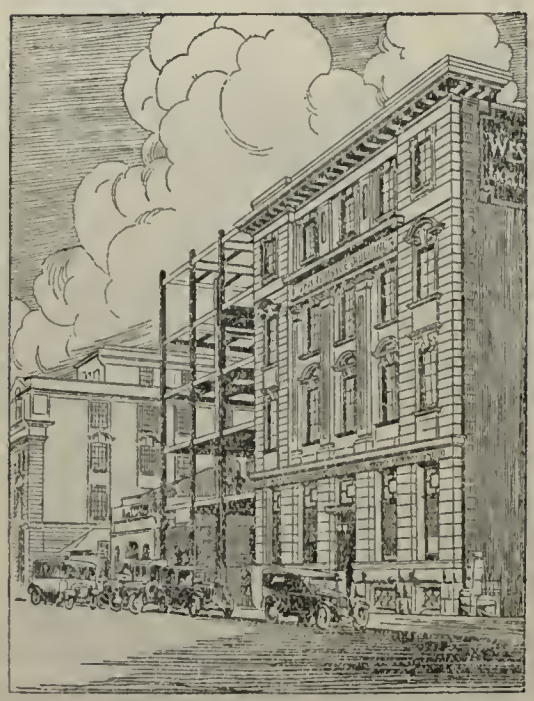


Old Supreme Court Buildings. On site of present Supreme Court.

Streets have been constructed in Greater Perth to a length of over 170 miles, most of them being substantially

made of tar-dressed Macadam, tar Macadam, bituminous Macadam, and bituminous concrete. From a small beginning city finance has reached large proportions, the revenue of the Council on general account for the current year being expected to reach £193,000. In loan expenditure moderation has been exercised, the total loans raised amounting to £1,765,000 against which sinking funds have accumulated to the amount of £310,000, leaving a net indebtedness well within the statutory powers of the municipality and small in comparison with the value of the assets created.

With a ratepayers' roll of 21,500 persons, a capital value for assessment purposes of £23,785,000, and a gross annual revenue of over £370,000, the city has now reached a stage of importance that will justify during the Centenary year the conferring upon its chief citizen of the dignity of Lord Mayor, an honour which will sit appropriately on the shoulders of the Hon. J. T. Franklin, C.M.G., M.L.C., now in his sixth year of office as Mayor, and a distinction which will be much appreciated by the citizens. The present Town Clerk, Mr. W. E. Bold, has occupied that position since 1900.



A bit of St. George's Terrace in 1929, illustrating the new type of building in course of erection side by side with one of the old single-storey structures now rapidly disappearing.

Recently a town-planning Commission has been established under appropriate legislation. Thirty or forty years ago a Commission including some of the foremost men in the United States of America was appointed to advise the authorities as to the means by which the city of Washington might be made worthy of its exalted position as the capital of a great

country. After a careful study of all the examples of civic beauty offered by the old world and the new, they returned to the plans of the original designer of the city—the French engineer, L'Enfant—and accepted them as the model for reconstruction and development. In this there may be guidance for Perth's town planning Commission. There is in the Department of Lands a plan prepared by Mr. Surveyor Hillman in 1838. The design did not extend further west than Milligan Street. Its motif was the encircling of the principal city blocks by four streets each 99 feet wide, viz., St. George's Terrace, William Street, Wellington Street, and Lord Street. It was a plan appropriate to circumstances and mindful of future requirements.

XXIX: LITERATURE AND ART.

HE Public Library, Museum, and Art Gallery of Western Australia owes its existence to the desire, universal throughout the British Empire, to erect lasting memorials in celebration of the jubilee of the reign of her late Majesty Queen Victoria, in 1887. A commission, appointed to consider a suitable method of commemorating this event, recommended the Government to establish an institute to be called the Victoria Jubilee Institute, comprising a public library, museum, and art gallery. The recommendations were in the main adopted, but as the state of Colonial funds at that time would not permit the full scheme being carried out, it was agreed that one portion only should be proceeded with, that of the public library, which should bear the title of the Victoria Public Library.

The various sections of the institution ultimately came into existence, and on the passing of the Act of 1911, the Public Library, the Museum, and the Art Gallery were incorporated under a body of Trustees, of which the Honourable Sir John Winthrop Hackett, K.C.M.G., M.A., LL.D., M.L.C., was appointed the first President.

The foundation stone of the Library was laid on the 21st June, 1887, but no steps were taken to proceed with the building. A Committee of Management was appointed, suitable premises were leased, and the institution opened to the public on the 26th January, 1889, with less than 2,000 volumes on the shelves. The collection increased but slowly until 1894, when the Colony began to enjoy a greatly increased material prosperity, due to the discovery of gold. As the original site proved to be unsuitable, a large block of land on the northern side of the railway was reserved by the Government as a permanent site for a building intended to carry out the full object of the jubilee memorial; and in 1897, coincident with Queen Victoria's Diamond

Jubilee, the first portion of the present pile of buildings was erected. Additions have been made from time to time, and about £80,000 has been expended in providing accommodation.

From its small beginning, the Public Library has grown into one of the larger national libraries of Australia, and the collection of books on its shelves numbers 148,000, entitling it to rank in size and importance immediately after the great collections of Sydney and Melbourne.

The original Public Library, St. George's Terrace.

Keeping in view the national character of the institution, the authorities in 1903 instituted a system of travelling libraries under which many of the widely scattered towns and settlements are supplied with books they would otherwise be unable to obtain. Whilst 60 per cent. of such collections usually consists of fiction, the balance is made of books upon literature, history, biography, and travel, as well as a careful selection of scientific and technical works suited to local conditions. At present some 16,000 volumes are in circulation amongst over 200 societies, institutions, and organisations scattered over the State from Wyndham in the far north to Eucla in the extreme south-east. The travelling library system has been extended, with the co-operation of the Government, to include small schools situated in isolated country districts, the object being to give children a taste for reading by supplying them with suitable light literature. Anything in the nature of a text-book is rigorously excluded, as there is no desire by means of these school libraries to extend the periods of school instruction.

Nearly every national library specialises in one phase of work or another ; the phase adopted in the Public Library is that of collecting books, manuscripts, drawings, photographs, or relics relating to the early history and the growth of Western Australia. As the State has just reached its first centenary, there are still many opportunities of adding to this collection, which is rapidly increasing both in size and value.

The nucleus of the Museum in Western Australia was established as long ago as 1860, when, mainly through the efforts of the then Surveyor General, Captain J. S. Roe, a small collection was brought together and attached to the Swan River Mechanics' Institute. In 1881, at the suggestion of the then Governor, Sir William Robinson, all the geological specimens that had been collected in the early days by Dr. F. Von Sommer, A. C. and F. T. Gregory, H. Y. L. Brown, and E. T. Hardman, were brought together and formed a small geological museum, which was placed under the curatorship of the Rev. C. G. Nicolay, an Anglican clergyman, who possessed considerable scientific knowledge. This collection was removed to Perth in 1889, and placed under the control of Mr. H. P. Woodward, the then Government Geologist. In 1892 the original collection made by Captain Roe, and which had remained in the possession of the Swan River Mechanics' Institute, was purchased by the Government, and the two collections were amalgamated as a Western Australian Museum of a general scientific character. The control of the Museum was transferred in 1895 to a committee, the personnel of which was the same as that which governed the Public Library. The collections have been extended from the one small room into six large galleries, wherein are fully displayed collections relating to every branch of science.

Particular attention is paid to specimens found in, or relating to, Western Australia, and in that regard the collection is probably one of the most complete in the world. There is a comprehensive collection of specimens relating to Western Australian ethnology. In addition to the exhibits themselves, which illustrate the life and activities of the native race, photographs and lengthy descriptive notices are placed on view so that a survey of the

whole gallery may give to the visitor an accurate knowledge of the life history of the aboriginal people of the State.

Through the generosity of the late Sir Winthrop Hackett the Museum contains a priceless collection of mammalian remains from the pleistocene cave deposits of the Margaret River in the Sussex district. So far over thirty distinct species have been found in this collection, several of them new to science, and as thousands of specimens still await careful examination and description, it is possible that further discoveries may be made.

When the Museum was placed under the control of a Committee in 1895, that body at once recognised that its functions ought to be extended to include an art gallery, and so proceeded to form the nucleus of an art collection within the Museum. This expanded so rapidly that in 1908 a special wing of the institution was built to house the artistic portion of the collections. This wing includes a picture gallery, a sculpture gallery, and a water colour room. Unfortunately funds have not been available for the purchase of original pieces of statuary, and the Trustees have had to confine themselves to fac-simile plaster casts of Assyrian, Egyptian, Hellenic, and Hellenistic Greek, Roman, and Renaissance work. The gallery contains some very fine examples of pottery, glassware, and metal work, both ancient and modern, as well as the beginnings of a good numismatic collection.

The picture gallery is devoted solely to oil paintings, and is decorated with a freize of casts representing the Pan-Athenaic procession. As may naturally be expected, both on the grounds of expense and of difficulty in procuring them, old masters are sparsely represented, but the gallery contains a fairly comprehensive collection of the British, French, and Australian schools. Amongst the works of the British school are examples of Gainsborough, Lawrence, Gonnington, and Creswick, on the earlier side, and Clausen, La Thangue, Melton Fisher, Munnings, and others on the modern side. Of the Australian work the most important examples are " Into the Light," by Hans Heysen, the gift of Mr. W. H. Vincent, one of the Trustees, and " Barron Gorge," by Arthur Streeton. A noticeable feature of the French section is a snow scene by Daubigny.

The collection also includes some examples of the work of German and Dutch schools.

The picture gallery has benefited more than any other part of the institution from the generosity of the late Sir Winthrop Hackett, who, during his lifetime, made many gifts of great value to the gallery, and in his will provided a substantial sum for further purchases.

Library, Museum, and Art Gallery.

The water colour room contains examples by McWhirter, Waterlow, Fulleylove, David Cox, Sir J. D. Linton, and others, as well as a collection of Japanese coloured wood cuts, and other forms of engraved and process work

Up to the present it has not been possible to form a definite technological section, but there are many examples of technological work of considerable value, especially art needlework and woven fabrics, forming the basis of a section which, some time in the future, will display the evolution of arts and crafts in different parts of the world.

The latest Trustees of the Institution were His Grace the Archbishop of Perth, Dr. C. O. L. Riley, O.B.E., M.A. D.D., LL.D., V.D. (President), Hon. Sir R. F. McMillan, K.C.M.G., Hon. T. P. Draper, C.B.E., Hon. W. Dwyer, LL.B., Dr. H. T. Kelsall, Rev. D. I. Freedman, B.A., and Messrs. E. H. Barker, H. S. King, J. W. R. Linton, C. G. Morris, F. A. Moss, A. H. Panton, W. Somerville, and W. H. Vincent.

XXX: ZOOLOGY AND ACCLIMATATION.

THE delightfully situated Zoological Gardens at South Perth is one of several institutions that owes its origin to the vision and patriotism of Sir Winthrop Hackett. From the inception of the undertaking in 1897 until his death in 1916 he was its President, and on his death he left £4,000 for the benefit of the gardens. During thirty years the attendance has exceeded three million persons, and in addition to affording delight and instruction to the young, the gardens have been the centre of important work in zoology and acclimatation.

The mild climate is eminently suitable for the breeding of wild and other foreign animals, and amongst those that are successfully produced are lions, tigers, black leopards, leopards, caracals, monkeys of various kinds, lemurs, wild cats, bantengs or sondoic oxen, water buffalo, zebu, and various cattle including the anoa (the smallest of the buffalo), antelope, including elands, nylghai, and blackbuck, various deer, including axis, red, fallow, rusa, Timor, and equine. Large numbers of kangaroos, wallabies, and other marsupials are also bred every year, and frequently exchanged with other zoological gardens. Both local and imported birds are bred freely, notably emus, swans, wild ducks, ostriches, and many beautiful pheasants. In March, 1929, eight boa constrictors were hatched the first of their kind that have been bred in Australia.

In acclimatation most gratifying results have been achieved. Large numbers of water fowl have been hatched and released, in many cases spreading widely. Fresh water fish have been introduced, most of the southern streams of the State are now the home of English perch, whilst Murray cod and silver perch have been imported from South Australia, and many large swamps are stocked with carp and tench. Elands were introduced many years ago but succumbed to native poisons. Blackbuck,

released about three hundred miles north of Perth, have thriven to such an extent as to require thinning out to prevent their becoming a nuisance. Red deer turned out about fifty miles south of Perth have multiplied and it is necessary to destroy many as they come into cultivated land. Fallow and equine deer introduced in the south-west have been less successful.

Pheasants and partridges have so far failed to establish themselves in the wild state, but the Chinese quail—very similar to the native kind—have done well. The guinea fowl of Africa has proved the hardiest of all the imported birds and is thriving amazingly on the coast. Unfortunately it is comparatively easy to shoot when pursued by dogs, and when roosting at night it betrays its hiding place by uttering subdued notes when disturbed, rendering its capture easy. White swans have bred freely. Many years ago six left Monger's Lake and a few years later over twenty returned, but being disturbed they sought a more secluded locality. Canadian geese and the spur-winged goose of South Africa breed freely and may become valuable game birds if pot-hunters can be induced to give them an opportunity to increase. Sparrows and starlings and Indian mynahs have not yet reached Western Australia, and none of the native birds, except perhaps the whistler family, have yet taken their place in the suburbs of Perth. Indian and South African doves have been acclimated and have spread far and wide, following the road lines. The substitution of the motor car for the horse, however, has decreased their food supply and checked increase. The dry climate is very suitable to the domestic cats gone wild, and these have wiped out several species of native birds.

A portion of the gardens has been reserved for botanical sections. Commanding charming views of the Swan and Canning rivers, it will ultimately be one of the most attractive and instructive features. Special attention will be given to the wonderful native flora of the State. Indifferent soil has retarded this development but the difficulty is being overcome. An artesian bore sunk to a depth of 1,865 feet discharges 500,000 gallons of warm water daily. The water is radio-active and reaches the surface at a

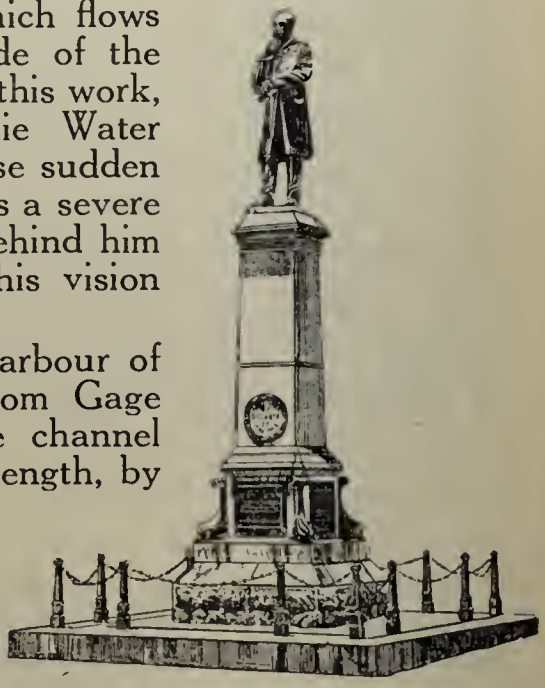
temperature of 103 degrees F. It is an asset to the gardens of incalculable value and likely to be much more largely exploited in the future. Its use in the tropical houses is most helpful to the large pythons and snakes, and they thrive surprisingly. Its valuable curative properties are not yet fully appreciated, but baths have been established which may some day rival the popular spas of older countries.

The use of this highly mineralised water on the white drift sand in the lower portions of the gardens has contributed to a growth that is quite exceptional. Travellers of wide knowledge have expressed amazement at the variety, the beauty and the vigour of the palms, Japanese bamboos, and other trees and shrubs.

The gardens serve immediate utilitarian purposes. For over a quarter of a century the Director has given lectures in Nature study to visiting school children, and he supplements his lectures to University students on veterinary science by practical work in anatomy and pathology, the material for study being the horses killed as food for the animals. For sporting purposes, running grounds and thirty tennis courts have been established, and band concerts and entertainments are given throughout the year. The gardens were designed, and from their inception have been directed, by Lieut.-Col. E. A. Le Souef, V.D., B.V.Sc., F.Z.S., a member of a family distinguished in Australian zoology. He has the assistance of an honorary committee of which Mr. A. E. Morgans is the present Chairman.

XXXI: THE WESTERN GATEWAY.

HEN Captain Fremantle, of the "Challenger," landed at the mouth of the Swan River on the second day of May, 1829, and took formal possession of the west coast of New Holland in the name of His Britannic Majesty, he opened the western gateway to the island continent of Australia, and it is fitting that this great national port should bear his name. Originally a shallow and rocky estuary to the Swan River, it was converted, by the genius of the late Charles Yelverton O'Connor, C.M.G., into a commodious harbour splendidly equipped for the discharge of its function as the main funnel through which flows the import and export trade of the country. As the designer of this work, and also of the Coolgardie Water Scheme, Mr. O'Connor, whose sudden death in 1901 was deplored as a severe blow to the State, has left behind him imperishable monuments to his vision and his engineering skill.



C. Y. O'Connor Memorial, Fremantle.

The working or inner harbour of Fremantle is approached from Gage Roads through an entrance channel approximately 5,500 feet in length, by a bottom width of 450 feet protected by two rubble moles, that on the north side covering practically the full length of the channel. This entrance channel opens into a basin over 5,000 feet in length fronted by continuous wharf quays. On the south side is Victoria Quay, 5,249 feet in length, and on the north, North Quay, with a length of 4,821 feet. The clear water width between quay faces is 1,400 feet.

As a result of dredging, the depth of water throughout the entrance channel and the inner harbour basin is 36 feet at lowest water, and as the harbour is little troubled by tidal rise and fall it can accommodate by day or night, and fully loaded, the largest ships now trading to Australia. Should ships of still greater draft come here in the future, provision has been made in all wharf building to deepen

Old Jetty at Fremantle.

down to 40 feet below datum. In addition to the quays there are heavy mooring buoys in the centre of the basin to which vessels not requiring wharf berths can be moored.

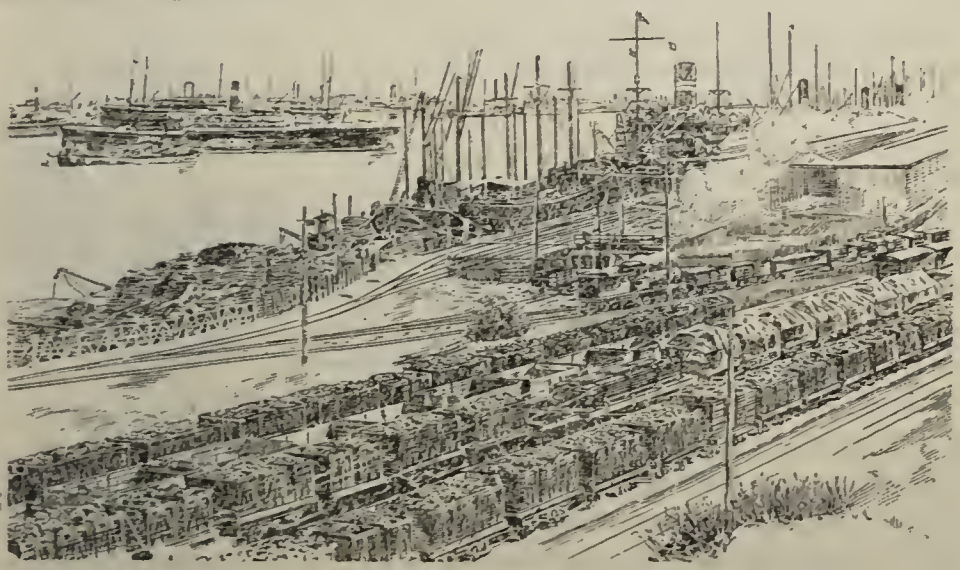
The shore equipment for the rapid handling of goods is in keeping with the importance of the harbour. On Victoria Quay, where practically the whole of the general cargo both inwards and outwards is handled, there are erected large sheds lit by electricity, specially ventilated and of such design as to reduce labour charges to a minimum. Both the wharf and the land side of each shed are served by railway lines, so that outward cargo can be loaded on to the ship from the truck in which it was placed at point of origin, and inward cargo goes direct from the ship into the truck that will convey it to its destination.

Victoria Quay is now being rebuilt, reinforced concrete piles—made on the Harbour Trust premises—taking the place of the old jarrah timber piles. The upper structure is of jarrah or karri, but the top-decking is being covered with a blanket of bitumen and cement concrete. Both for piles and top-decking the native hardwoods had served admirably, but these timbers are now being turned largely to purposes for which they bring higher prices, and difficulty would be experienced in getting the number of long timber piles that would be required. In conjunction with the rebuilding work the whole shed accommodation is being re-arranged, and shed floor space of over 340,000 square feet will be made available. The sheds, reduced in number, will be lengthened and widened and the floor space increased by 80,000 square feet. In addition, between the sheds, there will be 165,000 square feet of open wharf cargo-stacking area. The increase in the length of the sheds from 330 to approximately 500 feet has been necessitated by the increase in the length of the modern steamers now visiting Fremantle. The width has been expanded from 70 to 100 feet. The sheds will combine many advantages, including height, ventilation, light, and bitumen flooring, which long years of experience have shown to be desirable.

Railway facilities are also being improved by the provision of a central entrance and exit about the centre of the quay, and the laying of the second railway line at the rear of the sheds sufficiently far out to enable lorries to work without interruption by shunting operations. All the sidings are being laid with heavier rails, each provided with its check rail. The general aim has been to bring the entire quay up to date in every respect, and engineers connected with harbour and wharf activities in other countries have declared that the finished portion will compare favourably with the best in other parts of the world.

In wharf plant Victoria Quay is particularly well equipped, and additions as required are made from time to time. There are now fourteen rail gantry cranes of three-ton capacity. The latest are of the Babcock and Wilcox level luffing type with a height to jib end of 90 feet and a radius of 65 feet when fully extended. It is an inspiring sight

to watch these cranes swing a sling of goods over the top of the navigating bridge—or the funnels if necessary—of a twenty thousand ton mail liner. There are also small runabout delivery cranes working on railway lines, and mobile cranes available for work on the wharf, in sheds or on roadways, generating their own power as they go; and winches to assist in shunting rakes of railway trucks; and motor power lorries.



Fremantle Harbour, 1929.

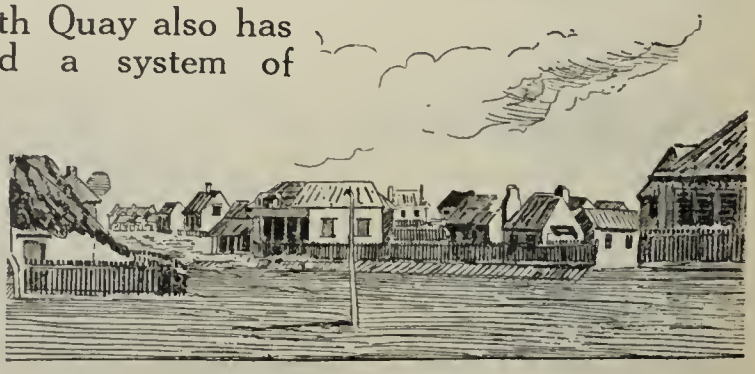
The new "A" and "B" sheds are equipped with 5-ton hoists, enabling heavy cases to be handled rapidly and with ease. The power used is electric of three phases, alternating. It comes from the Perth Power House to the Fremantle wharves at 6,600 volts, and is transformed to 440 volts for power purposes, 250 volts for shed and wharf lighting, and 110 volts for ship lighting.

The new level luffing cranes were built locally by the State Implement Works and are an improvement on the latest cranes built for the Port of London authority and installed at King George V. and Tilbury Docks on the Thames. The same works have now in hand a 20-ton capacity crane of the Babcock and Wilcox type for Victoria Quay.

Practically the whole of the wheat shipments from the port are carried out on the North Quay, where there are two large grain sheds capable of accommodating 500,000 bags

of wheat. Hand labour is eliminated as far as possible, the stacking or shipping being done by electric gantry cranes, shipping gantries, and fixed and portable elevators and band conveyors. For several months in the year, whilst the State's rapidly growing exportable surplus of wheat is being shipped to consuming countries, the North Quay presents a scene of striking interest and animation. In few places is bagged wheat handled more expeditiously.

On the North Quay also has been installed a system of pumping petrol and kerosene in bulk through pipe mains from tank steamers to the oil companies' storage tanks. Liquid fuel for oil burning on Diesel engined vessels is at present handled at Victoria Quay, the pipe line running throughout the length of the quay with eight ship connections. This number will be increased to eighteen and the mains have been duplicated. Already Fremantle—in keeping with its position as the first and last port of call—is the largest oil fueling port in Australia, and the work is ever on the increase.



Packenham Street, Fremantle, 1832.

Throughout the design of the wharves one important aim has been to enable ships to do the whole of their work while lying at their original berth. They can land and embark passengers, and take in bunker coal or oil or other supplies simultaneously without shifting to other positions. Shipmasters are of opinion that such wharves and appliances as are in daily use at Fremantle exist nowhere else in the Commonwealth ; some make the sweeping assertion that nowhere in the world are there more convenient and better equipped quays.

Since 1904 the system of administration has been in advance of that obtaining at other Australian ports. The Port Authority—the Harbour Trust—does the whole cargo work on the wharves. It receives and delivers all cargo

as between ships and the owners of goods both inwards and outwards, giving and taking receipts and accepting the responsibility of wharfingers. In this practice Fremantle stands alone amongst the ports of Australia. The port is governed by a board of five commissioners appointed by the Government under " The Fremantle Harbour Trust Act, 1902."

The trust came into existence on January 1, 1903, and the revenue during the first year of its operations was about £80,000. A quarter of a century later—in the year ended June 30, 1928—the revenue was £535,500, whilst the tonnage of shipping visiting the port increased in the same period from 1,322,584 tons to 3,448,500 tons net, or 5,661,500 tons gross ; and the cargo handled expanded from 500,000 tons to 1,700,000 tons. The capital cost at the end of June, 1928, was £2,444,235, on which the Trust finds interest, sinking and renewal funds, as well as operating costs. This magnificent harbour is entirely self-supporting.

The entrances to the port are well marked by day and well lighted by night. Recent years have shown constantly changing conditions in the design and the size of ships, and these have been met in the development of the port.

The direction in which a permanent extension of harbour facilities is to be made is at the moment a subject of exhaustive inquiry and considerable public controversy. The Engineer-in-Chief has recommended a comparatively short extension up river as far as Bruce Street, North Fremantle ; subsequent needs to be met by the building of a new harbour outside the coastline northward of the north mole. The Fremantle Harbour Trust Commissioners, guided by their nautical advisers, recommend that all extensions shall be made in an up-river direction. The Government and Parliament are impressed with the vital necessity of reaching a right decision in view of the fact that Fremantle is destined to become one of the great harbours of the world.

On June 3, 1929, Fremantle was proclaimed a city : the second in Western Australia. The honour of being the first Mayor of the new city fell upon Mr. F. E. Gibson. It

is open to the contention that a more appropriate date for the ceremony—one of the most important of the Centenary year—would have been May 2, the hundredth anniversary of Captain Fremantle's first landing.

Admiral Sir Charles Howe Fremantle, G.C.B., was the second son of Admiral Sir Thomas Francis Fremantle, G.C.B., and was born on June 1, 1800. He was the first recipient of the Gold Medal of the Royal National Lifeboat Institution for gallantry in saving life from shipwreck. He performed conspicuous service during the Crimean War, and commanded the Channel Fleet from its formation in July, 1858, to September, 1860. He died in 1869, leaving no issue. His nephew, Admiral Sir Edmund Fremantle, died in London in 1929 at the age of 93, leaving a son, who is also an Admiral in the British navy.

The diary and letters of Admiral Sir C. H. Fremantle, relating to the founding of the Colony of Western Australia, have just been published—for private circulation—by his great-nephew, Lord Cottesloe, C.B. The "Challenger" is described as a frigate of 600 tons. In his diary Captain Fremantle speaks of Garden Island as "late Isle Buacke of the French," instead of Buache Island as it is named in other maps and documents. Carnac Island he refers to as "Pulo Carnac, or Isle Berthollet of the French." On April 27 the "Challenger" ran into what is now known as Challenger Rock, and the incident is thus related in the Captain's diary:

> Never since I have been at sea have I witnessed anything to equal the carelessness and stupidity of the Master; he placed a buoy on a rock and then steered for the buoy and ran the ship immediately on it. The Master deserves to be hanged immediately.

Commenting on the anchorage in Gage Roads Captain Fremantle wrote: "There is a better roadstead further in called Britannia Roads." This is not noted on the charts.

The diary records the catching of an abundance of fish, "chiefly snappers," and the killing on Garden Island of many seals, and a "kangaroo, not larger than a hare." On Saturday, May 2, after the formal ceremony at Arthur's Head, Captain Fremantle journeyed up the river and camped for the night at Point Heathcote. Next morning he

> proceeded round the point where the river branches off in two directions; the arm to the right is called Canning's River by Captain Stirling, and by the French Entree Moreau.

The natives were very friendly, but Captain Fremantle reposed little confidence in them, whilst taking the greatest care not to provoke their hostility. Before the "Parmelia" arrived he had planted vine cuttings and seeds of mustard, cress and lettuce on the mainland, and had landed there a bull, two calves, four sheep and some poultry. He made frequent reference to "the mineral spring up the river," and to "landing at Point Walter to dine."

The diary for June 1 records the sighting of a ship outside Rottnest Island. Next day the "Parmelia" stood in to Gage Roads and stranded on Parmelia Bank. The efforts of the "Challenger" men failed to refloat her, and the women and children were removed to the frigate. On the morning of June 3 "she came off entirely of herself." The entry for that day concludes:

> Captain Stirling and myself returned on board the "Challenger" in the cutter; found my cabin full of women and in terrible confusion; turned half of them out.

On June 8 the arrival of the "Sulphur" is recorded, but Captain Fremantle speaks of her as being "of little or no use, having few men and being more like a merchant ship than a man-of-war, with constant complaints and rows on board."

Captain Fremantle sailed in the "Challenger" for India on August 28, 1829. He returned to the Colony on September 5, 1832, and his diary expresses acute disappointment at the appearance of Perth, "very few houses having been built, and many of these scarcely worthy of the name." He speaks of a journey up the Swan River beyond the capital

> to the estate of Mr. Edward Pomeroy Barrett Lennard, fifth son of Sir Thomas Barrett Lennard, Bart., Member for Essex; he has done more than any of the settlers, having cleared a good deal; has a good stock of cattle and his land is well fenced in.

Notwithstanding the difficulties they were called upon to face Captain Fremantle found the settlers generally satisfied with the country and their situation, and of the port itself he wrote:

> Fremantle has many pretty and tolerable houses and several are in progress, and in spite of its sandy and unpromising appearance at landing I have no doubt, if the colony continues, of its being in time a place of consequence.

XXXII: OUTPORTS AND COUNTRY TOWNS.

OF THE many valuable natural harbours around the coast of Western Australia only fourteen have been developed, and the principal port of Fremantle is the only one that is completely equipped in full compliance with the requirements of a modern harbour.

Wyndham, in the north-east corner of the State, is situated on the eastern shore of Cambridge Gulf, 47 miles from Lacrosse Island, which lies at the entrance to the Gulf. The approach—particularly after entering the narrows between Black Cliff Point and Nicholl Point—is through very narrow

Culham, near Toodyay, in the thirties, from the *Illustrated London News*.

channels with heavy tide rips; passing close under precipitous cliffs, through numerous small islands, and between intricate sandbanks until the port is reached. There is an old town jetty and an up-to-date jetty at Stony

Point, near the meat works. There is 31 feet of water at this jetty at low water, with a rise of spring tide of 30 feet, so that large vessels can load to a great depth. The products of the meat works are hauled by steam locomotive to the jetty and shipments are handled expeditiously. In addition to live cattle about 14,000 tons of cargo—chiefly frozen beef and meat works products—is handled yearly, the working season extending from April to the end of September or the beginning of October.

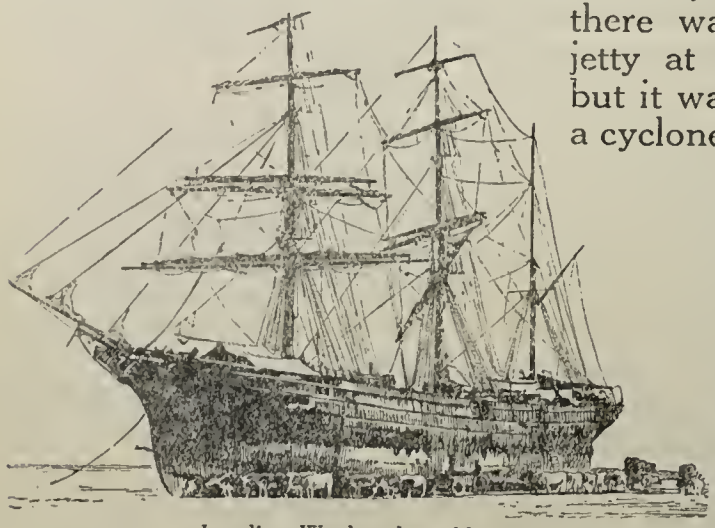
Derby is at the head of King Sound, 60 miles south-south-west from Cape Leveque, which marks the entrance to the Sound through Meda Pass. The equinoctial spring tides rise to 36 feet, and at low water a vessel lies practically dry at the jetty. A horse-drawn tram conveys passengers and cargo from the town to the jetty. The principal export is live cattle shipped south for the metropolitan market during the months of March to October. A little sandalwood is also exported. An A.G.A. light, recently erected at Pt. Torment, eighteen miles north of Derby, has proved a great benefit to mariners. Suitable cattle races are provided for the rapid loading of stock, an operation carried out at night.

Broome is on the western shore of Roebuck Bay and the jetty will accommodate one vessel on each side. The maximum rise and fall of the tide is 28 feet, and at spring tides at low water not only are vessels at the jetty absolutely dry but the water recedes for a distance of three-quarters of a mile past the jetty. A steam tramway connects the jetty with the town for the conveyance of cargo and passengers. The principal export is mother-of-pearl shell.

Port Hedland is on the eastern shore of the inlet and may be approached only at high water, as sandbanks extend off shore for several miles and at low tide are nearly dry. The entrance between Hunt Point and Airey Point is intricate, but once alongside the jetty the port is very safe for shipping. There is 36 feet of water, with a spring rise of about 20 feet. Tide signals are made to ships in the offing from a yardarm on the main lighthouse tower, and there is a tide gauge at the jetty from which all tidal information relating to the North-West coast is computed.

Port Hedland is connected with Marble Bar by railway, and the principal exports are wool, a little mother-of-pearl shell, and some stock.

Cossack boasts a small wharf inside the creek, and cargo is lightered from ships to this wharf for transport by motor lorry to Roebourne, twelve miles away. Prior to 1925 there was a substantial jetty at Point Sampson, but it was demolished in a cyclone. A new jetty is to be constructed at Phillip Point in King Bay.



Loading Wool at low tide.

Onslow is served by a modern concrete jetty at Beadon Point, completed in 1925. All the buildings of the old town of Onslow were then removed to Beadon, which is connected with the jetty by tramway and motor locomotive. There is 23 feet of water at low water ordinary spring tides at the jetty, with a rise and fall of about nine feet. The principal exports are wool and sheep.

Carnarvon is situated on the eastern shore of the Gascoyne River, some three miles from the mouth. At this point there is an exceptionally long jetty which will accommodate a vessel on either side with a depth of water of about 19 feet, and a spring rise of about five feet. The jetty is connected with the town by steam tramway. The principal exports are wool and sheep.

Geraldton, in Champion Bay, is the centre of one of the oldest settled districts, and its first jetty was built about 65 years ago. The Bay faces north and west but has some natural protection on the west from two lines of reef running out from Point Moore. Tides are small, rising only about 2ft. 6in. on springs, and 1ft. 9in. on neaps. The building of the Midland Railway in 1891 created a demand for

improved shipping facilities and a new jetty, the railway jetty, was built in 1893. Its original length was 950 feet, and a depth of 13 feet at low water was provided. It has since been extended to a length of 2,750 feet, with 23 feet of water. Serving an area of 145,000 square miles, of which at least 12,700 square miles is suitable for cereal growing, Geraldton urgently needs harbour accommodation for the biggest vessels trading to Australia, and a new harbour is now under construction, work on which was begun in 1924. An island breakwater, 2,200 feet long, was completed in 1926 and is designed to provide shelter to the wharf which is being constructed in front of and roughly parallel to the existing shore line.

The first instalment of the new harbour will include 1,350 feet of wharf, in order to provide for two cargo vessels and one of the regular coastal traders at the same time. An approach channel to the wharf is being dredged to a depth of 30 feet. The total length of the channel is 3,300 feet and initially it is being dredged to a width of 300 feet, which will be extended. Inside the breakwater, dredging is also in progress to a depth of 30 feet. Notwithstanding the defects of the old harbour the expansion in tonnage handled of recent years has been considerable, the inward and outward cargo increasing from 40,000 tons in 1921 to nearly 100,000 tons last year. Nearly ninety per cent. of the export trade is in wheat and this will be increased when the work now in progress is sufficiently advanced to permit of the complete loading of large ocean-going vessels. The completion of the railway from Meekatharra to Horseshoe will make available large quantities of manganese ore for export from Geraldton. It is hoped that sufficient work will be completed in the harbour to give a turning circle of 1,000 feet to a depth of 25 feet, and to make one berth available for the wheat season of 1931. The work will then proceed until completion.

Bunbury is situated in Koombana Bay, some 110 miles south of Fremantle. The Brunswick, Preston, and Collie Rivers all discharge into Leschenault Estuary which in turn empties itself into Koombana Bay. The Bay was originally fully exposed to the north and west, and after the first jetty was built in 1864 more than one vessel was

wrecked. In 1897-9 the existing breakwater was built, two extensions having been since undertaken in 1906-8 and 1915-18. Following each extension the jetty has been lengthened to the extreme limit of protection provided by the breakwater. The breakwater is now 5,015 feet in length, 25 feet wide at the shore end and 57 feet at the head. The jetty has a length of 3,950 feet and provides

An old picture of Bunbury, published in the *Illustrated London News* in the forties.

5,800 feet of berthage, the maximum depth at the end being 28 feet. It is well equipped with sidings and cranes for loading timber, which forms the principal export.

It is recorded that during the first quarter of 1841 Bunbury was visited by 24 American whalers, 3 British vessels, and one West Australian vessel, the average tonnage being 316 tons; the average of the vessels now using the port is about 4,500 tons. The import trade—now consisting chiefly of inflammable oil in cases—has not expanded during recent years and ranges from 6,000 to 8,000 tons, but the export trade has grown from 200,000 tons in 1919-20 to 400,000 tons last year, timber constituting 85 per cent. of the total. Harbour extension is now being considered.

Busselton, thirty miles from Bunbury, lies in the southern part of Geographe Bay and faces due north. The port is

used wholly for the export of timber and is without protection, natural or artificial. The jetty was first built in 1869 and subsequently extended to a length of 5,850 feet into a depth of 23 feet of water. The inward cargo to Busselton averages about a thousand tons per annum and the outward cargo between 40,000 and 50,000 tons.

Albany possesses one of the finest harbours in Australia. Princess Royal Harbour is entered from King George Sound by a channel dredged to 33 feet at low water, and is fully protected. Prior to the construction of the Fremantle Harbour, Albany was the port of call for all the mail steamers coming to Western Australia, and the Aberdeen, Blue Funnel, and Liverpool White Star liners still call there on their outward voyages. There is a town jetty and a deep sea jetty (originally built by the Great Southern Railway Company under their concession). The latter has been added to by the State Government to form a mail boat jetty and provides a 550 feet berth on its west side and one of 350 feet on the east side, the depth of water being 32 feet in the former and 30 feet in the latter. At the mail boat jetty the berth on each side is 800 feet long with 33 feet of water in the south berth, and 25 feet in the northern one. The railway runs into each of the jetties but all cargo is handled by the vessels' own gear. Railway extensions in the district will largely increase the trade of the port in the future. The imports and exports, exclusive of bunker coal, for 1928 were 14,205 tons and 35,135 tons respectively, whilst about 18,000 tons of coal is bunkered each year.

Hopetoun (known also as Mary Ann Haven) is the terminal of an isolated railway from Ravensthorpe, 34½ miles in length. The railway was built in 1907-9 to assist the development of gold and copper mines. The original jetty, 642 feet long, was built in 1901 to a depth of water of only 8 feet, and has since been extended to a total length of 1,416 feet, providing a berth on each side of the head 300 feet long with a depth of 12 feet. Only about a thousand tons of inward cargo is handled and about the same quantity of outward cargo, though recently there has been some development in wheat shipments.

Esperance Bay, 250 miles east of Albany, faces southwest and is flanked by bold headlands. On the west is

Dempster Head, on the east Cape Le Grand, the distance between them in a direct line being 12 miles. Lying off the Bay is the Archipelago of the Recherche, which from the shore gives the Bay the appearance of being entirely land-locked. The township of Esperance is laid out under the shelter of Dempster Head, and the jetty is located to obtain shelter from the south-west from the same headland. The jetty was completed in 1897, when Esperance had some prominence as providing the most direct means of approach to the Coolgardie Goldfields from the Eastern colonies. A railway line was opened from Coolgardie to

York in the thirties, from the *Illustrated London News*.

Norseman in 1909, but was not completed to Esperance until 1927. The first shipment of wheat from Esperance took place in 1925, when a German-owned auxiliary sailing vessel loaded 18,000 bags. The shipments of wheat in 1928 increased to 261,000 bags and this quantity is likely to expand rapidly.

A hydrographic survey of the west side of the Bay has been completed and the question of extending the facilities

for shipping is being considered. Great depth of water exists over the whole Bay with good holding ground for anchorages. It is approached by two deep-water channels from the south-west, the main one being the Causeway channel, while the other is known as the Inner Channel. Both are easily made. The Bay is fully protected on the north and east; it is sheltered on the west by Dempster Head, and on the south by the numerous islands of the Archipelago. Enjoying a magnificent climate and offering unrivalled attractions to the sportsman and the angler, Esperance is becoming one of the most favoured holiday resorts in the State.

The grave of John Morrell, on a lofty eminence overlooking the town of Northam, of which he was the founder.

The extent to which the development of wheat growing has expanded the outward trade of the different ports along the south-western and southern coasts is illustrated in the following table:—

WHEAT EXPORTS.

Port.	1924-25.	1927-28.
	Tons.	Tons.
Fremantle	305,680	516,000
Geraldton	50,363	88,793
Bunbury	52,092	79,340
Albany	9,442	29,343
Esperance	*Nil*	7,200
Hopetoun	312	1,500

The country towns of Western Australia have increased rapidly in number, but, with a few exceptions, have not grown in population at a rate commensurate with the general progress of the State. The pioneer country towns were York, Northam, and Beverley, each established within a couple of years of the foundation of the Colony. In the last 35 years Northam has rapidly outgrown the other two, chiefly as the result of its selection as the starting point of the railway to the eastern goldfields. Throughout the State the railway has played a big part in the building up of country towns, places such as Narrogin and Merredin reaching a considerable population very quickly because of their importance as centres of railway administration. The following table shows the population of each of the ten larger country towns at the last five census periods and at the end of last year :—

—	1881.	1891.	1901.	1911.	1921.	1928.
Albany	1,024	2,665	3,594	3,586	3,980	3,980
Bridgetown	101	133	....	994	1,391	(Rd. Dist.) 1,971
Bunbury	583	572	2,455	3,763	4,478	5,700
Collie	....	....	....	1,731	3,314	3,700
Geraldton	911	1,218	2,458	3,478	4,177	(1927.) 4,400
Katanning	....	....	....	1,917	2,324	(Rd. Dist.) 5,370
Narrogin	....	....	....	1,651	1,874	3,000
Northam	252	477	2,018	3,361	3,583	(1927.) 5,000
Wagin	....	....	....	1,000	1,266	1,310
York	757	1,199	1,362	1,535	1,510	(1927.) 1,600

To meet the demands of settlement, new towns and townships spring quickly into existence, and their creation invariably exemplifies a continuance of a spirit of civic pride and eagerness for public service, characteristic of West Australian people throughout the century. To Municipalities, Road Boards, and Progress Associations the busiest men in each community devote their services without

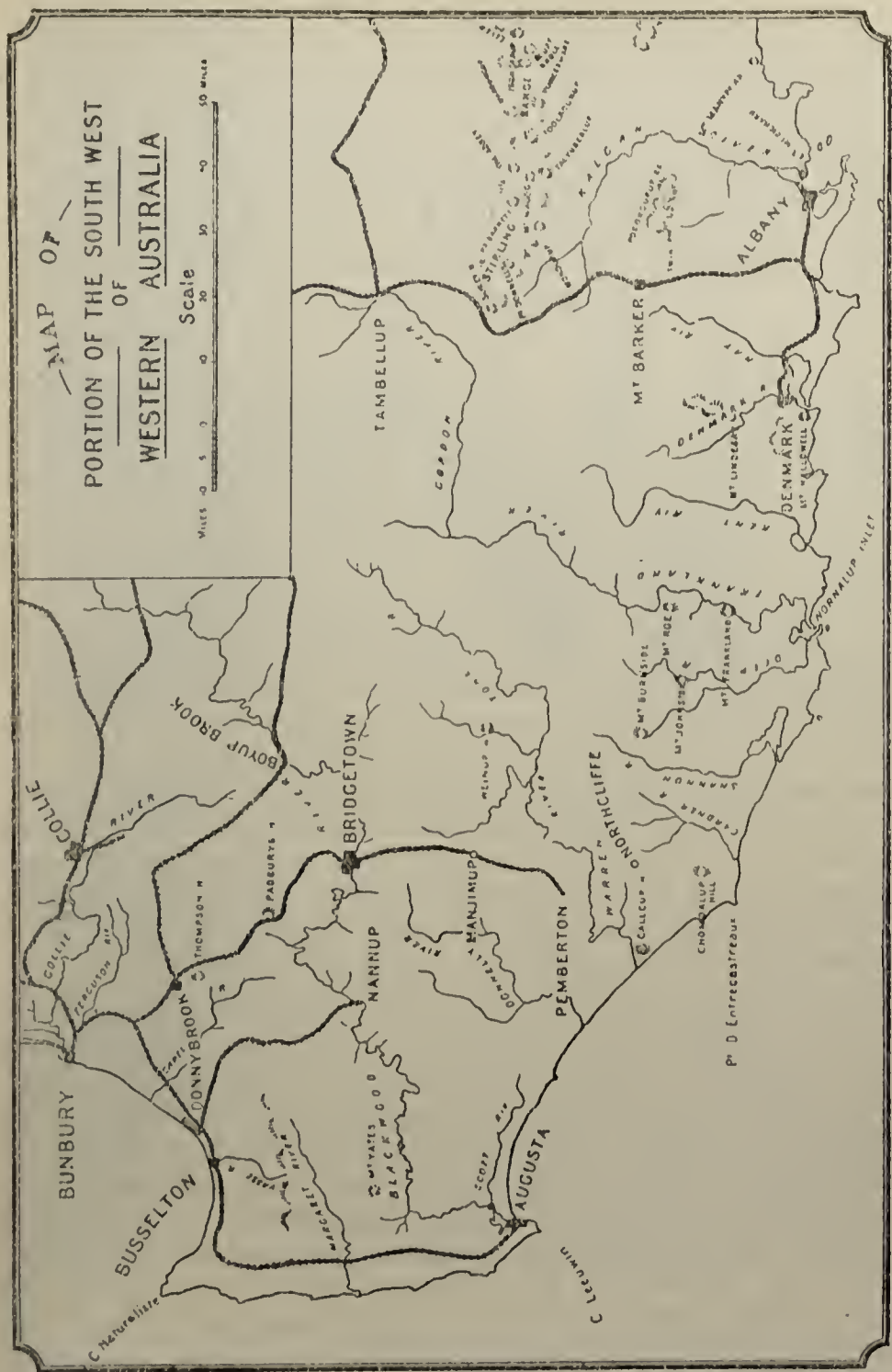
fee, and with no thought of reward beyond the satisfaction of seeing the amenities of civilisation taking form under their hands. In all the larger towns and many of the smaller townships are electrical installations for light and power purposes, generally owned by the local governing authorities, and even the smallest township has its places of worship and its public hall for recreation and meetings. At convenient centres hospitals have been established and are largely maintained by local effort. Enterprising traders have erected commodious stores catering for all wants, and an enlightened licensing board, with State-wide jurisdiction, has brought the houses of accommodation for the travelling public up to a higher standard than obtains in any other part of the Commonwealth. Western Australia has good cause to be proud of her country towns, and of the men and women who have made them what they are.

XXXIII: THE SOUTH-WEST CORNER.

IRST things first. It is the unvarying, the inevitable rule in colonisation. Governor Stirling, in his dispatch to the home authorities in 1830, commented on the long dry season in the Swan River settlement and suggested that for the purposes of pasturage "the Colony may be extended three degrees to the southward." But the eastern districts, where the land could be quickly and cheaply prepared for the plough, offered more immediate returns, and at a later date the north presented lesser difficulties in the way of sheep and cattle raising on a large scale. The colonists did first the things that were best worth doing at the time. The result is that to-day in the south-west corner of the State there is a larger area of sparsely peopled country enjoying in the highest degree the threefold advantages of perfect climate, good soil, and abundant rainfall, than can be found anywhere else in the known world.

Insistent demands by new arrivals for more and more land, drove Stirling early in 1830 to personally examine the country adjacent to the coast and south of the townsite of Clarence. As a result he established a military station at Port Leschenault, where Bunbury now stands, fondly hoping that he had added a new province to the Colony. Large areas were taken up by Colonel Latour, the Henty Bros., and others, but little use was made of them. Colonel Latour's grant of 103,000 acres was the location on which the settlement of Australind was established a decade later.

Captain Stirling himself selected 90,000 acres south-west of the Capel River as portion of the 100,000 acres awarded to him by the British Government, and in May, 1830, he set out with a small band of intending settlers to examine the locality with a view to establishing another township.


MAP OF
PORTION OF THE SOUTH WEST
OF
WESTERN AUSTRALIA
Scale
BUNBURY
BUSSELTON
DONNYBROOK
COLLIE
BOYUP BROOK
BRIDGETOWN
NANNUP
MANJIMUP
PEMBERTON
NORTHCLIFFE
AUGUSTA
TAMBELLUP
MT BARKER
ALBANY
DENMARK
C Naturaliste
C Leeuwin
Pt D Entrecastreaux

They rounded the Leeuwin, and after a voyage of four days landed at the mouth of the Blackwood in Flinders Bay, where they marked out the site of the township of Augusta. No other of the towns established in the first twelve months of the Colony's existence will celebrate the Centenary year in circumstances so closely resembling those obtaining at their origin. This delightful fishing village retains all its pristine charm: most of its original solitude. The same trees that gave shelter to the pioneers, await the celebrants of the end of a century of stagnation.

The settlers who accompanied Captain Stirling on that expedition were led by Captain (afterwards Colonel) Molloy, Messrs. J. A. C. and S. Bussell, and Mr. James Woodward Turner. Colonel John Molloy presents one of the most picturesque figures in early West Australian history. Born in England in 1780 he began life as a midshipman, but in 1807 purchased a commission in the old 95th—afterwards the Rifle Brigade. He was with Sir John Moore's army from Salamanca to Vigo, and fought under Wellington throughout the long campaign that terminated at Waterloo. There he was severely wounded and left for dead on the field, but recovered. The wars being over, he was attracted by the prospects and the life of adventure offered by the settlement at Swan River. In August, 1829, he was married to Georgina Kennedy and on October 18 they embarked on the "Warrior," taking with them sixteen servants, and several horses, cattle, sheep, and pigs. The Bussells were passengers by the same vessel.

The voyage out, with brief calls at Porto Praya and the Cape of Good Hope, occupied nearly five months, and they anchored off Rottnest Island on March 11, 1830. The stock—packed too closely on the little vessel—suffered greatly and there was heavy mortality. On arrival at Swan River nearly all the surviving animals were upset into the water at landing and died in consequence. The settlers sought unsuccessfully a suitable location on the Swan, and were persuaded by Captain Stirling's description of the country further south to accompany him there. On arrival at Augusta Captain Molloy was given command of the detachment of soldiers left to protect the settlement, and made Resident Magistrate. In the tent that formed

their first home, with an umbrella over the bed to keep out the rain drops, the Molloy's first child was born, on the 24th of May, 1830.

Selecting their grants, the settlers at once started cultivation. By August Turner had cropped between seven and eight acres of land ; in November Molloy had growing fields of rye and wheat. The soil was good, the climate

THE BUSSELL FAMILY.

From left to right: Lenox Bussell, Mary Bussell, Fanny Bussell, Charles Bussell, William Bussell, "Bob," Mrs. Bussell (Mother), John G. Bussell, Bessie Bussell, Alfred Bussell, Vernon Bussell.

perfect, the rainfall more than abundant ; but two overwhelming difficulties confronted them : the dense forests—with huge trees covering most of the land—and the distance from other settlement. The latter was perhaps the greater drawback, lack of transport preventing alike the obtaining of supplies and the profitable disposal of products. They were somewhat neglected by headquarters. No vessels arrived with supplies, and at the end of February, 1831, with all the necessaries of life exhausted excepting 30 lbs. of flour, they had to send a small boat—the "Eaglet"—to Fremantle for provisions. The natives occasioned only minor trouble, though they were given to pilfering.

In January, 1832, convinced that the country was too heavily timbered and too remote for successful agricultural or pastoral occupation, Molloy and the Bussells, with a party of soldiers of the 63rd Regiment, set out on foot on an

exploring tour. They were away nearly a fortnight, and as a result of the expedition Molloy applied for and was granted 12,400 acres of land on the Vasse River, Mr. Bussell obtaining a grant on the opposite bank. The Molloys, however, did not move to the new grant until 1839. The glowing heroisms of the Bussells' life at Augusta and the Vasse, are graphically told in Edward Shann's *Cattle Chosen.*

Letters written by Mrs. Molloy to relatives at home and friends at the Swan during their residence at Augusta are full of charm and interest. She speaks of the glorious climate, the little garden of English, Cape, and Australian flowers, the variety of small birds " most brilliant in plumage, tamer than any but the robin and sparrow in England." After deploring " the retrenchments that the Home Government are making, so inauspicious to our infant Colony," she says :

> We continue to like Augusta very much ; at all events we are freed from many unpleasant circumstances now existing in England. I hope the Almighty will have mercy on our irreligious land, and not smite according to their ill-doings.

In one of her letters, commenting on the difficulty of finding time to write, Mrs. Molloy says :

> I am often tempted to write on Sundays, but as yet I have and intend abstaining from it.

Tragedy creeps into the letters at frequent intervals. The death of two of her children—one a little toddling boy, who wandered to the well and, falling in, was drowned—intensified bitterly the burden of pioneering difficulties. She devoted all her spare hours to the collection of seeds and plants of native flowers and shrubs, and these, with her descriptive letters regarding them, were forwarded from Perth by Captain Mangles to Sir Joseph Paxton, the famous botanist and the designer of the Crystal Palace, by whom they were much appreciated. They added considerably to the knowledge of West Australian flora. After the transfer to the Vasse she continued this work until in December, 1842, she fell ill on the birth of her fifth child, never regaining strength. She died in April of the following year, and over the spot where her body was laid to rest was built the present Church of St. Mary's at the Vasse.

Mrs. Molloy's life was characteristic of the women of the time. A delicate lady of gentle birth and high refinement,

she bore with cheerfulness acute hardships and disappointments, finally dying for lack of those comforts and attentions the remote settlement could not afford. Of their old home at Augusta traces remain: the fig tree, some Cape gooseberries, of which she once wrote, "they are the only fruit we have here in abundance," the Bella Donna lilies and gladioli that she planted and which have spread over nearly

J. W. Turner's home at Augusta, from a drawing made in 1840, and now in the possession of Mr. J. Munroe McDermott. Near the centre of the picture is the Bussells' first home, and further to the left the first home of Colonel Molloy.

an acre of land. Colonel Molloy survived his wife for thirty years and played an important part in the settlement of the South-West. Once he returned to England and on his way back, visiting St. Helena, took cuttings of willows from the grave of Napoleon and planted them at his home on the Vasse. There they still flourish: a link between the little Corsican and Western Australia, forged by a very gallant soldier who fought against him, and who afterwards proved himself an enterprising and resourceful settler.

Of the three families that accompanied Captain Stirling to Augusta in 1830 only the Turners remained. Lands acquired by Mr. Turner in 1831 are still in the possession of his descendants, as well as many letters, diaries, and pictures chronicling the happenings of those early days. The diary of Mr. Turner's daughter, Ann Elizabeth,

afterwards the wife of Captain James McDermott—now in the possession of Mr. J. Munroe McDermott of Northam—vividly portrays the life at Augusta during the year 1839, the closing entry reciting the fact that the first roast beef tasted in the settlement provided dinner for Christmas Day. Mr. Turner was a man of great enterprise, his activities at Augusta including boat building. In 1849 he sailed to Fremantle in the " Bee," a schooner of his own construction.

The settlement of Australind under the auspices of the Western Australian Company of 33 Old Broad Street, London, was the next effort in peopling the south-west corner of the State. The land taken up by Colonel Latour at Port Leschenault was acquired by the company, which proposed, out of 51,000 acres of the grant, to establish a town of 1,000 acres—exclusive of quays, streets, squares, markets, churches, and public gardens—to be divided into 4,000 blocks of a quarter of an acre each ; the remaining 50,000 acres to be divided into 500 lots of rural land of 100 acres each. The terms on which the land was offered were :

> To each of the lots of 100 rural acres are attached four town sections of a quarter of an acre each, which rural acres and town sections—termed mixed allotments—are offered at £101 ; the remaining town sections at £10 each.

Of the purchase money for the mixed allotments, £50 was to be made available for defraying the cost of immigration to the settlement, and one half of the purchase money of town sections was to be spent by the company on objects of public utility and convenience in the town. The prospectus was issued on the 12th of August, 1840, and by the end of September 400 rural sections and 3,100 town blocks had been disposed of. A medical officer and nine surveyors were appointed and despatched to Australind in a small vessel, the " Island Queen," and the " Parkfield," a barque of 600 tons, was chartered to take out the first batch of settlers and emigrants.

In December—a week before the vessel was to sail—Captain George Grey arrived with information that Governor Hutt intended to cancel Colonel Latour's grant for non-fulfilment of conditions. Grey also advised that land in the neighbourhood of Port Grey—near the present town

of Geraldton—offered better opportunities for agricultural settlement. Placed in a quandary, the promoters decided to give purchasers the option of withdrawing their money or transferring it to a similar venture at Port Grey. Many withdrew, but the majority decided to continue. When the "Parkfield," with nearly a hundred settlers and immigrants on board, reached Koombana Bay on March 18, 1841, it was found that, in accordance with instructions from the Secretary of State for the Colonies, Colonel Latour's land had not been forfeited. Governor Hutt declined to sanction the suggested settlement at Port Grey because of its distance from the centre of population, and the original project of the company was reverted to, with depleted numbers and reduced capital.

Like the earlier attempt of Peel, this effort at large scale settlement was doomed from the outset. Towards the end of 1842 and early in 1843 ships with some 400 additional immigrants arrived, some to take up land, some as labourers. The settlers, men of small capital, were frequently unsuited to the new life; their lands, selected from a map in a London office, failed to satisfy them; markets for their products were remote and uncertain. Singly and in batches they drifted away to the Swan River and other more settled parts. The company struggled on for some thirty years before liquidation, and the land was finally offered down to 2s. per acre.

The scheme introduced to the Colony a number of good settlers, and many much-needed labourers, adding some hundreds to the population at a time when there was little other immigration. An outstanding feature of the enterprise was the splendid effort of the company's chief commissioner in Western Australia, Mr. Marshall Waller Clifton, F.R.S., who—aided by his sons—did all that was humanly possible to save the venture, and whose family has since been prominent in the development of the south-west and in the affairs of the State generally. In the diary of Archdeacon J. R. Wollaston (now in the possession of the Mitchell library in Sydney) is this entry under date February 27, 1857:

> Australind, sandy, dull and wretched—company's buildings on the hill burnt to ashes, and those below in ruins.

Archdeacon Wollaston came to the Colony as Chaplain to the Australind settlers and his diary, recording tours round all the then existing centres in the south-west, criticises, with engaging frankness and frequent severity, men and things. The great depression in trade is matter of frequent comment. In a house to house visitation the Archdeacon, who was evidently a man of ripe experience and strong convictions, formed his judgment of men, women, and children: those who came to church "as usual in the middle of the service," those who "will never get on." Too personal for publication—until by the lapse of time and the disappearance of families it will not occasion offence—the diary is a revelation of trials and disappointments that tested character to the last thread, revealing every strength and weakness, ennobling some, debasing others.

The pastoral industry made much slower progress in the south-west than in other parts of the State, and the wet lands were less suited for wheat growing than the eastern districts. Timber became an increasingly important export, creating considerable bush settlements and developing the ports of Bunbury and Busselton. The discovery of extensive coal seams gave birth to the thriving town of Collie, and the steady expansion of the fruit industry, particularly apple growing, pioneered by the Hester family, who were amongst the arrivals in the State in 1829, built up Bridgetown—the prettiest town in Western Australia—Mt. Barker, and other centres. In the neighbourhood of Bunbury dairying was slowly developed, but there was no great forward movement until after the close of the war.

In the repatriation of the soldiers several old estates in the south-west were repurchased and cut up for settlement, and new areas of Crown lands were made available. Late in 1920 the Prime Minister of the Commonwealth made an appeal to the Premiers of the States to submit proposals for the encouragement of immigration on broad Imperial lines with the two-fold object of securing people for Australia, and relieving the over-population of the old country. Some measure of financial assistance from both the Imperial and the Commonwealth Governments was suggested, and subsequently arranged.

The only State Premier ready to take advantage of such a proposal was Sir James Mitchell, who, in January, 1921, put forward a group settlement scheme, the fame of which has become almost world-wide. The State's large importations of foodstuffs—particularly dairy products—for the growth of which the wet south-west is eminently suited, had long caused dissatisfaction and uneasiness in the minds of those who had confidence in the country's resources and wished to see it more nearly self-supporting. The bold experiment of bringing together idle lands and idle men—even though the latter lacked money or experience—had been successful beyond all expectation in the eastern wheat belt, and was the basis of the new venture in the south-west.

Briefly, the proposal was that persons already resident in the State, and migrants from the old country, should be accepted for settlement and marshalled in groups of twenty. An area of land, suitable for close settlement, and divided into contiguous holdings of approximately 160 acres (the area to which settlers were entitled as a free grant under the land laws of the State) was allotted to each group. Temporary accommodation was provided for the men and their families, and, under a qualified foreman, with local experience, they proceeded as a party to the improvement of the area. The work to be done on each block comprised the complete clearing of five acres for intensive culture, the partial clearing and laying down in pasture of an additional twenty acres, the erection of a comfortable four-roomed cottage, fencing, and the provision of water supply. For the first three months settlers were given a sustenance allowance of 10s. per day for the maintenance of their wives and families; after that they were placed on piece work on a scale calculated to enable an average worker to earn at least as much as the sustenance allowance. It was estimated that between two and three years would be required to bring each block up to the required state of development, whereupon the group would split out, each taking his individual block (decided by ballot at an early stage of operations) and securing the necessary assistance to provide him with dairy cows and farming implements. Directly after the ballots, settlers

and their families were encouraged to work on their own blocks in their spare time, and every effort was made to complete the permanent homes as quickly as possible.

The outlay on each block, and the interest thereon, were capitalised—without any charge for the land—and became a debt on the part of the settler, repayable over thirty years, only the interest being collected during the first ten years. For the plant and stock advances were made by the Agricultural Bank, repayable in eight years, only the interest being collected during the first three years. In order to facilitate clearing operations the most up-to-date appliances in the way of tractors, tree-pullers, etc., were imported. The response to the scheme was general and immediate. Everywhere it was hailed as a bold, imaginative undertaking calculated to have a great influence upon the future, not only of the State, but of the Empire. Applications for inclusion in the groups came from all over the British Isles, from the goldfields—where diminishing activities were reducing employment—and from other parts of the State.

The first group of twenty settlers, composed partly of Australians and partly of British migrants, commenced work at Manjimup in March, 1921. At the end of eight years it is possible to pass in review the first results of the undertaking, and it must be confessed that had it not been supported by State borrowings far in excess of the original estimate it may well have failed, as did the earlier group settlement schemes of Peel and the Western Australian Company at Australind. The localities in which group settlements have been established are widely scattered throughout the south-west and include: the old Peel estate, south of Fremantle; the whole of the country adjacent to the coast between Busselton and Augusta, with lands along the Margaret and Blackwood Rivers; the heavily timbered karri country south of Bridgetown in the Palgarup, Manjimup, Pemberton, and Northcliffe areas; and much of the country along the Denmark and Kent Rivers, to the west of Albany.

To date the scheme has involved a total outlay of nearly £8,000,000, of which about £560,000 has been spent on

railway construction, over £1,000,000 on roads, more than £700,000 on drainage, and between £5,000,000 and £6,000,000 on the blocks themselves.

In all 2,442 holdings have been included in the scheme, but as the result of amalgamations and abandonments the present number is 1,741. Excluding stock and plant, the cost of the holdings may exceed £3,000 each. Believing that this will represent a burden beyond the capacity of the settler, the Government, with the authority of Parliament, has appointed a board to adjust charges in accordance with the prospective income derivable from each property. The roads, railways, and drainage undertakings are serving other large areas of alienated and Crown lands. The large expenditure on the blocks is partly due to the fact that the improvements have been carried far beyond the original intention. Instead of the proposed 25 acres, in heavily timbered country up to 70 acres has been cleared on a holding, and in lighter country more than 100 acres.

The human element has proved an important factor, not easy of calculation. Amongst the migrants were families not merely city bred, but the outcome of several generations of city life ; few were accustomed to the rigours of pioneering. Many of the Australians, too, embarked upon the undertaking with an inadequate conception of its nature. Sometimes the husband, sometimes the wife, proved utterly unsuited to the new conditions. Much also depended upon the foreman of the group, and because of the large number required to meet the immediate popularity of the scheme it was not always possible to obtain men of sufficient experience and of the right temperament. The natural difficulties—difficulties that have held back the development of the country for a century—have been enormous.

A great deal has been accomplished. On the group holdings about 100,000 acres have been cleared, of which three-fourths has been sown with pastures. The settlers have over 6,000 cows, four thousand heifers, and 2,300 horses. The average holding in the heavily timbered country with heavy soil in the Manjimup district is about 100 acres ; in the heavily timbered country with lighter soil—such as that on the Margaret River—160 to 200 acres ;

and in the lighter timbered areas 300 to 400 acres. Upwards of 100 settlers have ceased to receive any assistance from the State, and the groups are making large contributions to the growing butter production. Over two hundred motor cars are in the possession of group settlers; sixty-eight schools have been established for their children, as well as five hospitals and two rest houses for the sick. Medical funds are conducted by the settlers themselves, and the groups now have a population of more than 7,500 people.

The Busselton-Augusta and Denmark-Frankland Railways are the direct results of group settlements, whilst another section from Pemberton to Northcliffe is under construction. Shortly this will be continued through to Nornalup, linking up Albany with Bunbury and affording long-needed communication to a portion of the State possessing wonderful possibilities.

Group settlement will involve the State in considerable direct loss. On the other hand it has demonstrated the value of the South-West lands. It has shown that clearing in heavy forest country which formerly cost £40 per acre can be done for less than half that amount. It has revealed the extent to which clovers and superphosphates will increase the carrying capacity of the land. It has provided a powerful stimulus to private enterprise with the result that old settlers—who had never dreamed that such a thing was possible—have so improved their pastures as to feed up to four sheep to the acre. By supplying the group settlers with pedigree bulls from tested dams it has helped to grade up the dairy herds, encouraging a similar movement amongst private owners.

The fate of the group settlers is in their own hands. Those who prove fitted for the life—and to such it is a life of rare attraction—will find a just and generous Government ready to help them to a comfortable competency, in the pursuance of which they will repay the country four-fold for its initial loss. But the effect of the scheme is infinitely wider. It has gained recognition for a territory rivalling Gippsland or the Northern Rivers district of New South Wales for dairying and closer settlement. The eyes of the people have been opened to new possibilities. Experiments in

the cultivation of tobacco at Manjimup, Augusta, Nornalup, Denmark, Mt. Barker, and Broome Hill are full of promise. Group settlement has brought activity where there was stagnation ; vigorous life where there was only suspended animation.

Western Australia is specially fortunate in the pleasure resorts that Nature has provided for its people, and the most attractive of these are in the South-West. Along the

The Cave House at Yallingup.

coastal country from Busselton south to Augusta are large numbers of magnificent caves, many of them of great extent, rivalling in beauty and grandeur the world-famous Jenolan Caves in the Blue Mountains of New South Wales. Several are still unexplored but a number, including the Yallingup, Lake, Calgardup, Mammoth, and Coronation Caves, have been opened up and illuminated by electrical systems embracing many thousands of lights. Accommodation for visitors is provided at the Yallingup Cave House—a Government institution.

The rivers and bays along the coast furnish an angler's paradise, Nornalup Inlet at the mouth of the Frankland River being a favourite fishing ground and a spot of surpassing beauty. The scenery of this south-west corner resembles much of southern England, and for the motorist the drives in the neighbourhood of Bridgetown and Nannup, or through the Cave country down to the Leeuwin, are a

The Arab's Tent, Shawl formations, Yallingup Cave.

never-ending delight. All round the coast are splendid swimming beaches. Both the coastal and inland towns are well laid out, and the gorgeous assortment of native trees has been supplemented by many of English origin, oaks in particular growing much more quickly and to greater dimensions than in the old land. It is one of Nature's choicest gardens, the wild flowers in the spring being of almost endless variety and surpassing loveliness.

Albany has long been the most favoured summer resort for people from all parts of Western Australia. Easy of

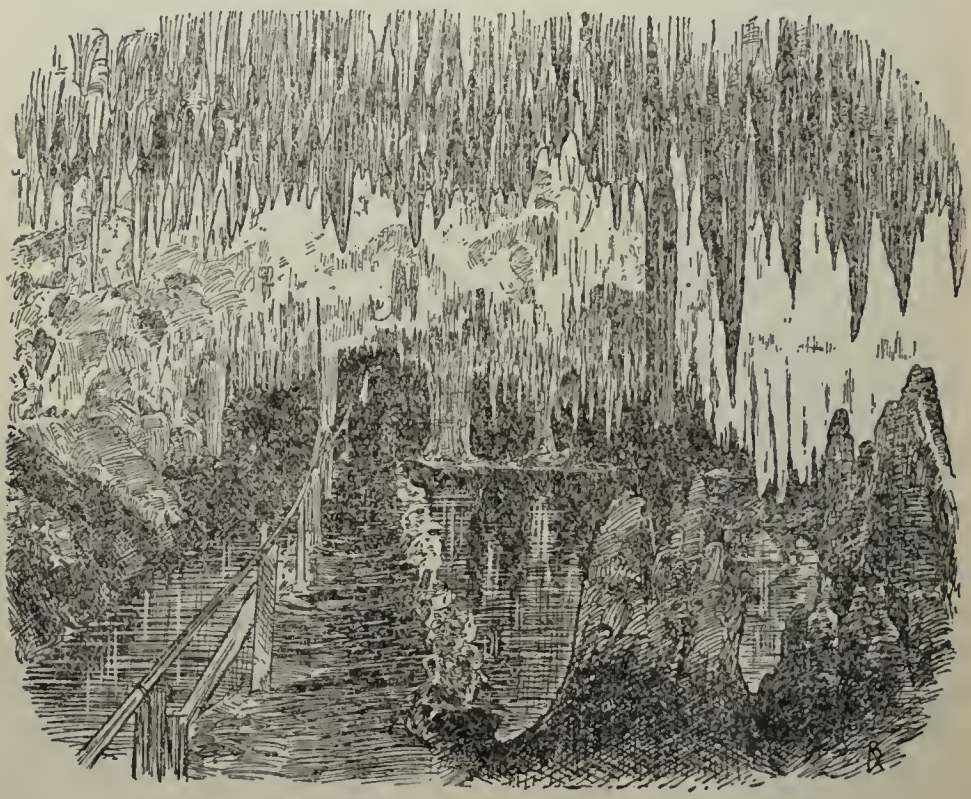
access, boasting a climate unequalled anywhere else in Australia, and possessing unique scenic advantages, it is destined, as the population of the State grows, to attain great importance. When better known it will attract thousands of visitors annually from Eastern Australia. Its magnificent harbour gives it natural commercial advantages, and the recent establishment of woollen mills in the town may be only the beginning of considerable industrial development. The exploitation of the agricultural, dairying, and orchard resources of the surrounding districts will further stimulate its growth ; but its chief charm—possibly its greatest value to the State—lies in its attraction to the holiday maker. It is the natural capital of the south-west.

North-west from Albany are the Porongorups and Stirling Ranges. Toolbrunup Peak, rising to a height of 3,341 feet, is an outstanding feature of the Stirling Ranges. In the Porongorups Ranges the Bolganup Ravine, bisecting the Devil's Slide and Nancy's Peak, filled with stately karri trees, with a crystal stream flowing through thick undergrowth and masses of maiden hair fern and over many miniature falls, is one of the most beautiful spots in the State. Twin Peaks and Castle Rock afford glorious climbs rewarded by magnificent views of the surrounding country and the distant sea. Many of the choicest specimens of West Australian wild flowers are to be found only in these ranges.

The triumph of the South-West is even now on the horizon. The difficulties that have retarded it are being removed ; its advantages are proving far greater than the most optimistic had believed. Over an area of something like 12,000,000 acres there is a rainfall of from 25 to 60 inches per annum. It is without exception the most reliable rainfall in the Commonwealth. Not only are droughts unknown but the variation of rainfall is the least in Australia—only ten per cent.

The climate throughout is ideal. The difference of temperature between summer and winter at Nornalup is only four degrees, and at Augusta only thirteen degrees. Because of this, and the favourable distribution of the rainfall throughout the twelve months, root crops are grown all the year round, and pastures can be grown all

the year round also. So far only annuals have been used, but perennials can be added. Already there are families doing well on forty-acre blocks, and there are few places in the world in which a greater tonnage can be produced off an acre of land in a given period. The land will carry a crop of potatoes with heavy dressings of artificial manures in July, followed with a crop of pumpkins, and then a crop of oats, so that three crops may be harvested off the same land in sixteen months.



Lake Cave, Margaret River.

Of the 12,000,000 acres of heavy rainfall country in this area 4,000,000 acres (chiefly rougher country) may be retained as permanent reserves for timber. Of the balance, probably one-third is suitable for intense culture—for settlement in 100-acre blocks—leaving over 5,000,000 acres for larger holdings, suitable for the breeding of pedigree stock. The exports will include apples, citrus fruits, barley, butter, cheese, pork, sheep, and lambs. All fruits—including the berries—can be grown, as well as hops and

tobacco. Everything New Zealand exports—and some things she does not—may be produced in this south-west corner.

What is required for its immediate development? By the State the construction of some 500 miles of railway, a great deal of road making, and some drainage; and by the individual, well directed labour and some capital outlay. To Western Australia, in the full vigour of its adult manhood, the task is small compared with those it has accomplished in its infancy and its youth. The reward is as certain as was offered by the wheat areas or the northern pastoral lands. There is room in the South-West for 30,000 small holders, and their settlement will demand the services of dozens of villages and townships. The imagination boggles at the possibilities of another century's achievements. Even the present generation may expect to find, south of Perth and west of Albany, a population greater than that of the entire State to-day.

XXXIV: EAST AND WEST KIMBERLEY.

FTER Dampier, a century and a quarter passed before the second Englishman visited the north-western portion of the continent of Australia, now known as Kimberley. Captain King in 1819 examined and named Vansittart Bay, Cambridge Gulf, Admiralty Gulf, the Prince Regent's River, and many other places on the coast, but did not explore the country inland. In 1836 Captain George Grey, of the 83rd Regiment, and Lieutenant Lushington, R.N., submitted to Lord Glenelg, the Secretary of State for the Colonies, an offer to conduct an expedition from the Swan River northwards to the country Dampier and King had described. Approved by the Royal Geographical Society, the offer was accepted, but it was decided that the expedition should commence from the mouth of the Prince Regent's River, and proceed southward to the Swan. The main objects were :

> To gain information as to the real state of north-western Australia, its resources, and the course and direction of its rivers and mountain ranges ; to familiarise the natives with the British name and character ; to search for and record all information concerning the natural resources of the country, and all details that might bear upon its capabilities for colonisation or the reverse ; and to collect specimens of its natural history.

Whilst a large discretion was left to Grey, as the leader of the expedition, it was required of him, in specific instructions, that after due examination of the country about the Prince Regent's River, he should take such a course as would lead in the direction of the great opening behind Dampier-land, and then

> use the utmost exertion to penetrate from thence to the Swan River ; as by adopting this course, you will proceed in a direction parallel to the unknown coast, and must necessarily cross every large river that flows from the interior towards that side of the continent.

SIR GEORGE GREY.

H.M. sloop of war, "Beagle," under the command of Captain Wickham, R.N., left Plymouth on July 5, 1837, and conveyed the party to Cape Town, where Captain Grey hired the "Lynher," a schooner of 140 tons, Henry Browse, master, in which to make the voyage to Hanover Bay. Few stories of discovery have been more delightfully told. Returning to England in 1840, Grey was engaged in preparing his notes for publication, when he was appointed Governor of the infant Colony of South Australia. He subsequently occupied like positions in several British colonies, including New Zealand, of which for many years he was Premier. He has left behind him a record of marvellous achievement as statesman and Empire builder, but, perhaps, no work of his will live longer than his *Journals of two expeditions of discovery in North-West and Western Australia.*

It was on the third of December, 1837, that Grey, with Lieutenant Lushington, Mr. Walker, the surgeon of the party, and three men, landed at High Bluff Point in Port George the Fourth, and walked to Hanover Bay. Some days were occupied in landing horses, sheep, and goats, but by the 9th disembarkation was complete, tents were pitched, the British flag was hoisted, and the little party "went through the ceremony of taking possession of the territory in the name of Her Majesty and her heirs for ever." On February 11 of the following year Grey was speared through the hip by a native, sustaining a severe wound that took many months to heal. In spite of this, and of countless difficulties and hardships, he continued the work of exploration until the 17th of April, when—abandoning the project of proceeding overland to the Swan River—the party set sail for the Isle of France, where they arrived a month later.

The incidents accompanying the spearing of Captain Grey are of interest as throwing some light on the attitude of the natives towards the white men with whom they were for the first time brought into contact. A member of Grey's party—a Cape Town lad not more than twenty years of age—was with Grey on one of his tours of examination, and was entrusted with the duty of marking trees here and there by chipping the bark, for the purpose of future

guidance. Grey noticed that the lad had omitted to mark one large tree and sent him back to do it. Finding that he remained absent longer than was expected, he called to him and then went back. He found the young fellow breathless and speechless with terror and confronted by a number of natives, one of whom had his spear fixed in a throwing stick ready to hurl at him.

> A moment before, the most solemn silence pervaded these woods; we deemed that not a human being moved within miles of us, and now they rang with savage and ferocious yells, and fierce armed men crowded round us on every side, bent on our destruction.

Grey at once took up an attitude of defiance, and, encumbered rather than assisted by his terrified companion, held the assailants at bay. A shot from his gun brought two of his men to his assistance and the attack was beaten off, but not before Grey had received three spear wounds, including one through the hip. He unhesitatingly declared that had the first man firmly stood his ground no trouble would have arisen.

> Like a coward he ran away, giving the natives confidence in themselves and contempt for us; this conjecture I afterwards ascertained was perfectly true.

In his journal, Grey makes many references to the rich basaltic country in the neighbourhood of the Glenelg River—which he named after the Secretary of State, and of which he says:

> I have since seen many Australian rivers, but none to equal this either in beauty or magnitude.

He studied closely the habits of the natives, and his journal contains many interesting copies of their cave drawings. The birds, too, attracted his notice:

> In no other country that I have yet visited do birds so abound. Even the virgin forests of South Africa cannot, in my belief, boast of such numerous feathered denizens. They possess in many instances an excessively beautiful plumage; and he alone who has traversed these wildly romantic regions, who has beheld a flock of many-coloured parrakeets, sweeping like a moving rainbow through the air, whilst the rocks and dells resound to their playful cries, can form an adequate idea of the scenes that there burst on the eyes of the wondering naturalist.

This bird life, for many years, has been systematically exploited by commercial interests, though probably not

to the greatest national advantage. Although Grey's expedition was carried out in the hot, wet, summer months, the party throughout enjoyed good health. The leader was fascinated with the country:

> We halted for the night in one of these lovely valleys; a clear stream bubbled along within about fifty yards of us, and, about a mile beyond, two darkly wooded basaltic hills raised their heads, and between these and the stream our ponies were feeding in grass higher than themselves. I sat in the fading light, looking at the scenery around me, which now for the first time gladdened the eyes of Europeans; and I wondered that so fair a land should only be the home of savage men: wondered how long these things were to be.

After the lapse of more than ninety years, those who have a passing knowledge of this portion of West Kimberley are still wondering—as Grey did—how long it is to remain only the abode of savage men.

A quarter of a century later, on June 6, 1863, a combined exploring and settlement party led by Mr. Kenneth Brown, left Geraldton in the "Flying Foam," 34 tons, Cooper, master, bound for the Glenelg River. The explorers were Messrs. K. Brown, B. Clarkson, S. Hamersley, and J. Martin; whilst the settlement party was under Mr. Aubrey Brown and included Mr. F. Pearce, a shepherd, a groom, a carpenter, and a general servant. They took seven horses, 25 sheep, two dogs, and stores for four months. On June 22 they reached Doubtful Bay, "a magnificent sheet of water nine miles in length and six miles in breadth: a harbour of refuge second to none." They also examined the country round Camden Harbour and up the Glenelg River as far as the rapids. From the streams rising in the MacDonald Ranges and flowing into the Glenelg they traversed magnificently grassed downs, gently undulating, 240 feet above sea level. In the diary of July 10 Martin wrote:

> We have already seen 300,000 acres of land of the finest quality for grazing, and although it is now drawing near to the close of the dry season, clothed with grass of the most luxuriant growth. The grass seed was at least three feet above our heads. It is the opinion of us all that the lowest estimate of the carrying power of this district is a sheep to the acre, therefore 300,000 sheep might be fed on it.

A further expedition—resulting from the report of a convict named Wildman (an ex-ship's officer), that whilst

his vessel was undergoing repairs in Camden Harbour, in 1856, he had found gold to the value of over £400—was promoted in 1864, under the leadership of Police Inspector Patrick Kennedy Panter, and left Fremantle on March 2, in the "New Perseverance," 105 tons, William Ouston master. No gold was discovered, but Dr. James Martin, who was a member of the party, subsequently submitted to the Governor an exhaustive report, in which, referring to the land in the Glenelg River district, he said:

The tall grass that covers much of the coastal country in the Kimberleys.

> All this country is so superior in grazing capabilities to the best districts occupied in the southern parts of Western Australia, that it is difficult to institute a comparison.

In his summary of the lands of the Glenelg, Augustus Island, Roebuck Bay, and Dampier-land districts, he estimated that there was an area of 5,592,000 acres capable of carrying 3,336,000 sheep—more than twenty times the total number of sheep in the whole of the Kimberleys to-day! One paragraph of the Doctor's report has a quaint flavour:

> As perfume plants the chamaelaucieae, the rutaceae, and the labiatae abound in species; but to what extent they will prove of value for perfume distillation it is difficult to foresee. Lastly, the acaciae, producing flowers in the utmost profusion (especially the large species fringing the upper Glenelg and nearly all the fresh water streams of the district), possessing such powerful and agreeable odours, may be indicated as proximate objects of commercial value when this luxuriant country shall become the home of an intelligent people.

The formation of the Roebuck Bay Pastoral and Agricultural Association followed upon these reports, and a little later the Camden Harbour Pastoral Association was formed

in Melbourne with a capital of £20,000, but was unsuccessful. Several further attempts to settle the rich lands of the Kimberleys had negative results until, in 1879, Mr. Alexander Forrest conducted a comprehensive exploration of the country along the Fitzroy River. After an unsuccessful attempt to penetrate the Leopold Range, he travelled up the valley of the Margaret River, discovered the well watered Nicholson Plains, examined the Ord River in East Kimberley, and proceeded to Daly Waters. This journey of nearly eight months, accomplished with much difficulty and at the cost of great suffering and privation, laid the foundation of the pastoral development of the north. Forrest reported that about 25,000,000 acres of the country he had examined was suitable for pastoral occupation or tropical agriculture, whilst Mr. Hill, the scientist who accompanied him, found traces of copper and suggested that gold would be discovered in the ranges towards the head waters of the Fitzroy: a prediction that was quickly realised.

In the following year Mr. George Paterson took the first flock of sheep into the Kimberleys, travelling them by boat to Beagle Bay and thence overland to Yeeda, on the Fitzroy. Many other selections of pastoral lands, under conditions specially applicable to the Kimberleys and issued in November, 1879, were quickly made, the total area taken up in the first two years being 5,500,000 acres. Forrest's report attracted enterprising settlers from all parts of Australia. About the end of 1880 two members of the Durack family, of Thylungra station in Western Queensland, came to Perth, and after discussion with Mr. Forrest, took up large tracts of country in both East and West Kimberley.

Funds for further exploration in East Kimberley were contributed by Mr. Patrick Durack and Mr. Emanuel, and a few months later a party under the leadership of Mr. Michael Durack and comprising Messrs. S. Emanuel, T. Kilfoyle, Pentecost, Jose, and Davidson, and two natives, equipped with twenty-seven horses and provisions for six months, set out from Sydney in a small vessel, the "Volmer," in which they proceeded to Port Darwin. There they secured a little sailing craft, the "Levuka," and after

a voyage of twelve days landed on the west side of Cambridge Gulf, opposite the site of the present town of Wyndham.

In the journey inland they discovered and named such rivers as the Pentecost, Durack, Denham, and Bow, and reached the Ord River about 140 miles from its mouth. They intercepted Forrest's tracks and passed over the country subsequently known as the Hall's Creek goldfield, where they found colours of gold. Proceeding westward, after a toilsome and difficult journey of about five months, they reached Beagle Bay, fully satisfied with the pastoral possibilities of the country and determined to stock their holdings without delay.

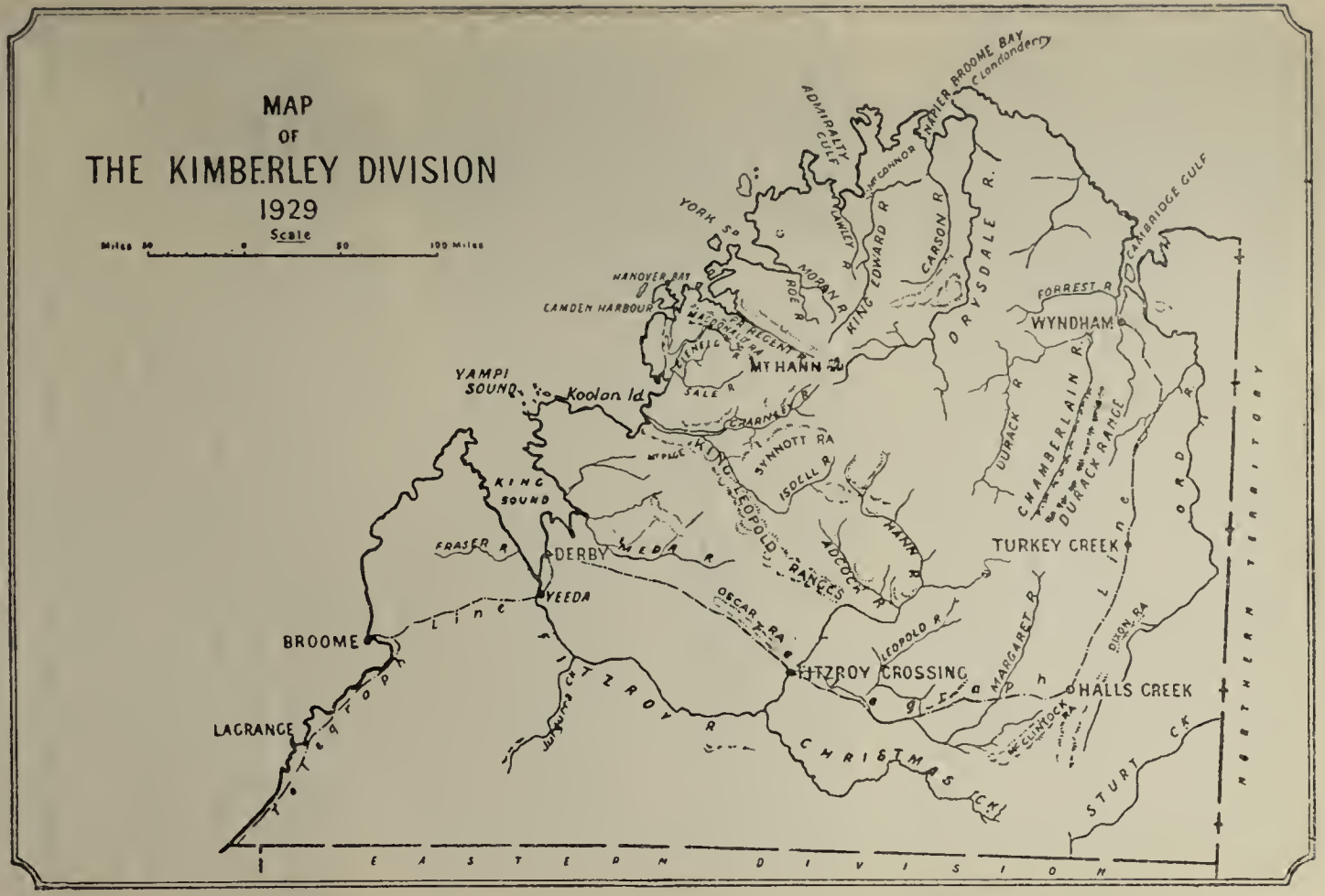
An undertaking, deserving to rank high in the annals of pioneering, was the transportation of the first cattle into East Kimberley. Early in 1883 four mobs left Central Queensland. The first of 2,500 head, owned by Mr. Patrick Durack, was under the control of Mr. John Durack (subsequently murdered by the natives); the second, also owned by Mr. Patrick Durack, consisted of 1,500 head in charge of Mr. Moore of New South Wales. Close behind these followed a mob of 2,000 breeders owned by Messrs. Durack, Kilfoyle, and Hayes (the original proprietors of Rosewood station, on the border of Western Australia and the Northern Territory) under the charge of Messrs. Kilfoyle and Hayes. The fourth mob of 2,000 was owned by Messrs. Hill and Michael Durack, the former being one of the pioneers of the cattle industry in Queensland and a member of the Queensland Parliament. This mob was in charge of Mr. Michael Durack, who had led the expedition of the previous year.

The four parties—sometimes widely separated from each other, sometimes in such close contact that the mobs became mixed and had to be sorted out again—encountered endless difficulties through flood, drought, fever, and depredations by natives. Finding a tortuous way, chiefly through unknown country, and forced by rivers and mountain ranges to steer in turn to all points of the compass, they traversed a distance of about 2,500 miles. At times it was necessary to camp for months waiting for rain, at other seasons floods stopped their progress. Crossing the

rivers cattle were occasionally killed by alligators ; others died from red-water. The waggons containing the food supplies were raided by the natives, who took everything with the exception of a blacksmith's anvil. The absence of vegetables caused painful outbreaks of scurvy ; the long poverty of diet, amounting to acute privation, and the general hardships of the journey told upon the strongest constitutions. In the Gulf country two men shot themselves in the delirium of fever and three others died, whilst pleuro was rampant amongst the cattle. The Ord River was reached in August, 1885, the trek having occupied two years and eight months. About half the cattle perished on the way and the cost of landing those that survived was approximately £20 per head.

The name of Durack is still closely associated with East Kimberley. The family gave its money, its great enterprise and organising ability, and the lives of several of its members to what up to the present has proved a hazardous and exacting undertaking. For some time the present head of the family, Mr. M. P. Durack, represented the district in Parliament, and for more than forty years the firm (subsequently Connor, Doherty, and Durack) has been the chief financial, commercial, and grazing influence in the territory. Amongst the members of their first pioneering party were some notable bushmen, particularly Mr. Nat Buchanan and Mr. Bob Button, whose work in opening up tracks through this still little known portion of the State is worthy of a country's grateful recognition, and whose names have been perpetuated in the nomenclature of mountains, rivers, and passes.

The division between East and West Kimberley is an imaginary line drawn due south from the eastern coast of Admiralty Gulf. The area of East Kimberley is 38,240,000 acres, and of West Kimberley 47,097,600 acres. In the former 15,200,560 acres is held under pastoral lease, in the latter 23,273,270 acres, so that considerably more than half the total area is still unoccupied. The accompanying map shows that both divisions have substantial mountain ranges, big rivers and magnificent harbours. Of the harbours only King Sound and Cambridge Gulf are at present in use. Both provide splendid accommodation for


MAP
OF
THE KIMBERLEY DIVISION
1929
Scale
Miles 50 0 50 100 Miles
NAPIER BROOME BAY
C Londonderry
ADMIRALTY GULF
YORK SP
HANOVER BAY
CAMDEN HARBOUR
MT HANN
YAMPI SOUND
Koolan Id
KING SOUND
DERBY
YEEDA
BROOME
LAGRANGE
FRASER R
MEDA R
OSCAR RA
FITZROY CROSSING
FITZROY R
CHRISTMAS CK
KING LEOPOLD RANGES
SYNNOTT RA
ISDELL R
ADCOCK R
HANN R
LEOPOLD R
MARGARET R
CLINTOCK RA
DIXON RA
HALLS CREEK
TURKEY CREEK
DURACK R
CHAMBERLAIN R
DURACK RANGE
WYNDHAM
FORREST R
CAMBRIDGE GULF
DRYSDALE R
CARSON R
KING EDWARD R
MORAN R
ROE R
LAWLEY R
MT CONNOR
STURT CK
ORD R
NORTHERN TERRITORY
EASTERN DIVISION

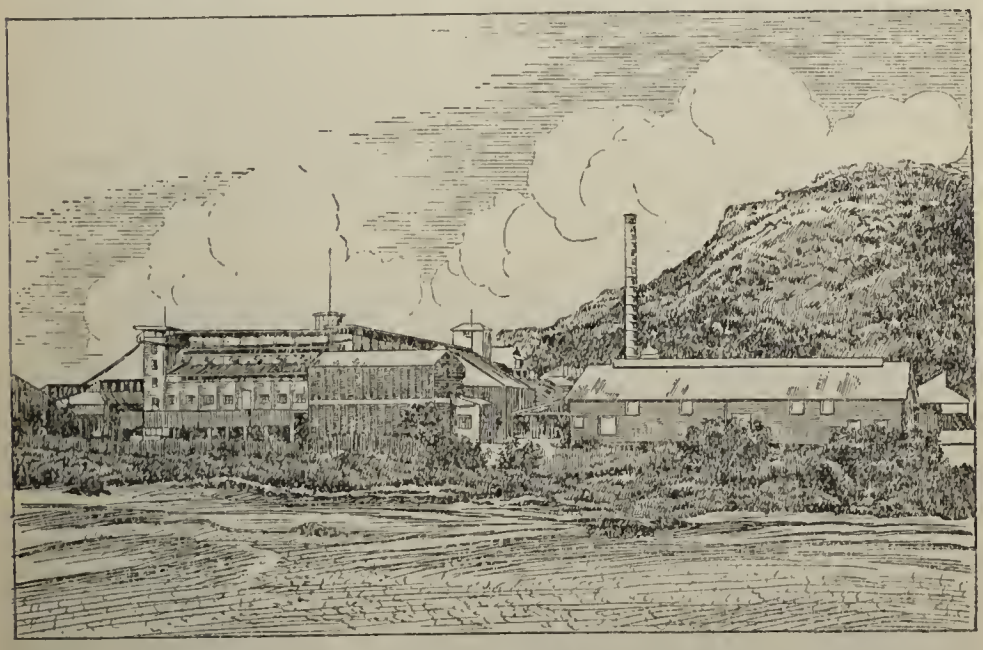
shipping. At the meat works' jetty at Wyndham there is 31 feet of water at low tide with a rise of spring tide of 30 feet, so that large ships can load to a great depth. Several other of the gulfs and bays offer equal, or greater, advantages as natural harbours. In some the maximum rise and fall of the tide is nearly 40 feet, though in the great expanse of Napier-Broome Bay it is only about 12 feet. In Admiralty Gulf extensive survey work has been recently carried out by the Naval Department under the Commonwealth Government. The opening of a port between Derby and Wyndham, with connecting inland roads and stock routes, must be regarded as an undertaking of increasing urgency.

The magnificently watered country in the northern portion of both East and West Kimberley, where the rainfall in places exceeds 60 inches per annum and is subject to little variation, and of which Grey and Mr. Brown's party of 1863 spoke with such enthusiasm, was further examined by Mr. F. S. Brockman, afterwards Surveyor General, in 1901 and 1904, and by Surveyor W. R. Easton in 1922. They confirmed previous opinions, the latter declaring that at no spot in that area would cattle be more than two miles from permanent water. It is still but sparsely occupied, though settlement is proceeding. The coastal country in this area, and the vast resources of the waters, are graphically described in Mr. E. J. Stuart's book, "A Land of Opportunities."

In extensive table-lands, enjoying high altitudes and super-abundant rainfall, no portion of the north of Western Australia can compare with the sugar country in the north-east of Queensland. On the other hand the Kimberleys are not subject to the droughts of inland Queensland. They furnish good cattle-breeding country, and their fattening capabilities have yet to be determined. The table-lands carry good pastures, whilst in the coastal regions the growth is rank. For experiments in lucerne growing the pandanus country, with water a few feet from the surface, is promising, though high soil temperature may constitute a difficulty. The country along the Ord River is exceptionally good. For intense culture probably the Ninbing country close to the coast, north-east from Wyndham, is the best fitted,

being exceptionally well watered. Two and three year old beasts from that locality have given good returns at the freezing works. Many of the Kimberley rivers can be trained so as to release rich alluvial plains for cultivation throughout the year.

Development in the Kimberleys has been slow—painfully slow. Of recent years the record has been one of decreasing population. At the census of 1911 the white population—omitting the pearling centre of Broome—comprised 901



The Wyndham Freezing Works.
The town of Wyndham lies at the foot of the big hill on the right.

males and 195 females; by 1921 the males had increased to 945 and the females had decreased to 186. The bulk of the increase was in the town of Wyndham, and consequent upon the establishment of the Wyndham freezing works. In the Hall's Creek division the population had increased in the ten years from 216 to 239, but in West Kimberley there had been a decline from 733 to 419, and it is to be feared that the census of 1931 will show little improvement. In regard to stock there is a similar tale to tell. The country along the Fitzroy River is chiefly devoted to sheep, but transport difficulties prevent the extension of this industry into the more remote areas, where much of the land is suitable for sheep farming.

Cattle raising remains the chief industry, and in the eleven years from 1916 to 1927 the herds decreased from 604,808 to 564,512. In West Kimberley there was a decrease of 95,000 head, probably due in part to the attractive price of wool, inducing greater sheep cultivation. In East Kimberley the increase of 56,000 head may be attributed to the establishment of the freezing works at Wyndham. The construction of these works was in hand when the war broke out in August, 1914. That world-shaking event, by enormously increasing the price of beef, furnished a powerful inducement for their rapid completion: it also created irritating delays in the obtaining of materials, and increased the cost beyond all anticipations. The war was over and prices had declined before the works were in full operation, whilst the construction costs exceeded the estimate almost four-fold.

The works have now operated for nine seasons. They have paid the growers about the same price as is given for similar cattle by works in the north of Queensland. The returns have covered operating expenses, but have not been sufficient to make any appreciable contribution to either interest or sinking fund. The buildings, plant, and machinery have been maintained in good working order, but otherwise depreciation has not been provided for. The present capital account stands at £880,000 and, in addition, interest amounting to nearly £692,000 has been provided out of the State's revenue. This heavy outlay has kept alive the cattle industry of East Kimberley, which must otherwise have depended largely on a somewhat limited market in Manila, Java, and other Eastern countries. West Kimberley growers rely chiefly on live export to the southern markets, but without the Wyndham works they would have been subjected to more intense competition, and several of them have sold their surplus stock to the meat works.

The defects of the position are well known and may be briefly summarised:

(*a*) The necessity, because of distance, of sending the meat in a frozen condition to the European markets where it has to compete with chilled meat from the Argentine;

(*b*) The generally depressed condition of beef prices ever since the collapse following the close of the war ;

(*c*) The high cost of operations, due to many factors, of which the short killing season is one of the chief ; and

(*d*) The inferior quality of the cattle as compared with the Argentine in their greater age of maturity and much smaller weight, due to :

(1) Neglect to breed up the herds, even to the point of deterioration, and

(2) The absence of artificial pastures to ensure rapid growth and fattening.

Can these difficulties be overcome ? Experimental shipments of chilled beef from Queensland ports and from Wyndham suggest that the first is not insuperable. As to the second there are signs of improvement in price. America may take more and more of the Argentine output, and the extension of agricultural settlement in the Argentine may decrease the pastoral holdings. These happenings would leave a greater percentage of the beef requirements of Europe to be filled by Australia. When other conditions justify it the killing season may be extended to eight or nine months. The provision of pasture at adjacent holding grounds may overcome the problem of transporting cattle in the wet season, though climatic conditions must constitute an obstacle to continuous operations throughout the twelve months. The extent to which price controls the situation is indicated by the fact that even on the present limited kill of 20,000 to 30,000 head per annum, an advance of 1d. per lb. would mean an increased yield of nearly £50,000. Recent returns have averaged all round a little more than 4d. per lb.

The herds can be improved. That they have been allowed to deteriorate is not wholly the fault of the pastoralist. He has been lacking neither in energy nor enterprise, but conditions have not justified the necessary outlay. Recently the Wyndham freezing works have imported large numbers of good herd bulls, which are sold to the station owners at cost price and on deferred terms. It is

only the beginning of a great work that must take some years to complete. Last season a mob of 370 bullocks from the station of a pioneer grower (Mr. F. C. Booty) yielded an average dressed weight of 693 lbs. and 517 lbs. of export beef. Whilst below the Argentine figure for younger cattle, this represents a substantial advance on

Giant Ant Hill. These abound in the Kimberleys.

Wyndham averages. Thirty-five years ago Argentine herds were in the same condition as those of Kimberley to-day. The remedy was found in the importation of high grade stud bulls, and it may be assumed that just as West Australian sheep breeders have been ready to pay the necessary money for the best rams that could be obtained, so the cattle men will be prepared—when prospects justify it—to give their thousands for the right type of bulls. The presence of foot and mouth disease in England has been a bar to the importation of high grade stock from that country.

There remains the question of artificial pastures. Heavy rains, combined with intense heat, stimulate an amazing growth for several months of the year; and much of the rass remains succulent throughout the long dry winter. But if results equal to those of other countries are to be obtained artificial pastures must be provided. In the

past the owners have contented themselves with using the lands along the river beds, where natural water is always available for the stock, but more recently extensive boring operations have proved the existence, over large areas, of sub-artesian supplies. The development of these—accompanied by suitable fencing and subdivision—will enormously increase the available grazing areas, and will also provide the necessary water for dry-season pastures. There is need for comprehensive and continuous experiment, and some reason to hope that as much may be accomplished in this direction as has been in the other extremity of the State: the south-west corner. In the meantime scientific endeavour is grappling with the problems presented by tick fever and the buffalo fly.

The relative advantages of very large as compared with moderate sized holdings have given rise to much discussion. For the former it is claimed that the developing of water supplies, the importing of expensive stock, the raising of pastures, the facing of occasional indifferent seasons, and the long wait for returns, demand the possession of very large capital. The extensive, and on the whole satisfactory, boring operations carried out on Vestey's properties—aggregating something like 30,000 square miles of country in the Northern Territory and East Kimberley—furnish an instance of large outlays not likely to bring in immediate returns. On the other hand the careful and close attention of the resident owner to all the details of production and marketing are necessary to secure the best results. It was the conservation of feed by fencing and subdivision, and constant and personal supervision that enabled the Rose brothers, many years ago, to carry 16,000 sheep on 40,000 acres at Quanban Downs on the Fitzroy, west of Fitzroy Crossing. Management from London is likely to lead to as many mistakes in cattle-raising as it has in gold mining. Recent legislation has fixed the maximum area of a holding at a million acres, and within that limit it may be found that the policies of large and smaller holdings are not mutually destructive.

The place of the aborigine in the economy of the cattle industry is deserving of some comment. The native boys take naturally to horses and are good stockmen;

they are faithful and attentive to their employer's interests. The girls, so long as they are well managed and encouraged in habits of cleanliness, are extremely useful in house work. Without the natives the industry could hardly be carried on at present, but it is not clear that they represent any great economic advantage towards future large developments. For each working native there is usually a numerous family to maintain. In the past cattle-killing by natives occasioned considerable loss to growers, but the establishment by the Government of cattle stations for the aborigines has greatly improved matters. In the more remote localities the wild natives are still a cause of much anxiety to the settlers.

The Baobab Tree.

Its only home in Australia is the country between Derby and Wyndham, near the coast, and for about fifty miles inland, where it grows in great numbers. It bears large pear-shaped nuts, about half the size of coco-nuts. The tree shown above is hollow and has been used as a lock-up for native prisoners in course of transportation to the coast.

In the Kimberleys, of all places in the world, there is no royal road to fortune. Public encouragement and private enterprise of the highest order alone can bring success. In particular is there need for the closest co-operation between the State authorities and the Commonwealth Government controlling the adjoining territory. Wyndham is the natural port for a big area of country extending as far as 300 miles over the border into the Northern Territory, and something like one-third of the cattle treated at Wyndham come from over the border. From many parts of the Northern Territory droving to Wyndham is preferable to taking the track to Katherine and the train journey thence to Darwin. Hall's Creek is an apex from which the country drains in all directions. The Fitzroy and the Ord Rivers,

emptying themselves into the sea at King Sound and Cambridge Gulf respectively—many hundreds of miles apart—have their origins, along with other minor streams, almost within a stone's throw of each other. Natural geographical conditions, not State boundaries, must be the dominating consideration in the framing of public policy.

No other portion of Australia has more to hope from the development of modern methods of transportation. Already the airway service between the capital and Derby has done much to break down the old isolation, and its extension through Hall's Creek to Wyndham will confer many and great benefits upon the scattered community in the heart of the Kimberleys, to whom in present conditions a mail once in two months is the best that can be expected during the rainy season. The motor car, too, has revolutionised life in these localities. Its practical uses have been exploited only to a limited extent, because of the absence of reasonably passable roads. With the pursuance of a comprehensive and continuous policy of road improvement many of the existing difficulties will be minimised ; to be removed entirely by the construction in due course of railway lines throughout the territory.

What population can, and should, the Kimberley country carry ? Geographers are by no means at one on the point. Some contend that climate will always severely limit the number of white people ; others—having in mind the present complete neglect of any of the amenities of civilisation—hold that with suitable housing and modern comforts, reasonable living conditions can be secured. A distinguished German scientist, Prof. Walter Geisler, who personally investigated the problem of Australia's capacity to carry population, puts the numbers that can be accommodated in the northern and western portions of the Kimberleys at 31 per square mile, in a little of the central portion at 52, and in the belt of country lying south of the fifteenth parallel and extending right across the Northern Territory into Queensland, at 65 : which latter figure is just half the suggested maximum carrying capacity of the most fertile country in the southern and eastern coastal belts of Australia. In selecting this area south of the fifteenth

parallel as being of the highest fertility, Von Geisler is supported by Mr. M. P. Durack, whose practical knowledge of the country is unrivalled.*

The realisation of Von Geisler's estimate would give East and West Kimberley a population of between four and five million people. This, if ever to be attained, is for the remote future. Situated much closer to foreign lands with teeming millions of people, rapidly increasing, than to the capital city from which their government is directed, the Kimberleys present an immediate and difficult problem, in which, happily, responsibility is balanced by opportunity. Beyond the bare outline that has been indicated, it is not here proposed to suggest the course that public policy or private adventure should pursue. But on the hundredth anniversary of Western Australia it is incumbent upon her people to pay a tribute to the heroisms of those who began, and who for more than forty years have carried on, in the face of grave discouragements, an enterprise still in its pioneering stages, the fruits of which will be enjoyed by generations that are to come.

* *See* Von Geisler's map reproduced in the closing chapter of this book.

XXXV: TRANSPORT.

REMARKABLE, almost beyond the power of language to describe, has been the progress made in the last hundred years in the methods of transport and communication by sea and land. The vessels employed by Captain Stirling and his band of pioneers in 1829 differed but slightly from those that had carried Columbus to the discovery of a new world 337 years before. Stephenson's "Rocket" had not made its trial run on an English railroad when the "Parmelia" reached Fremantle. In these hundred years there has been a greater advance in transportation than was achieved in all the previous ages since man first walked the earth, and of these developments the most notable have occurred within the last quarter of a century.

John Forrest travelled from Perth to Adelaide in five months in 1870; he came from Adelaide to Perth in three days in 1917; to-day

Argosies of magic sail

do the journey between the morning of one day and the afternoon of the next, with a night's rest in between. Many still living colonists, travelling by the then fastest means, spent more than three months between London and Fremantle; now mails and passengers do the journey in less than four weeks, and an airship to accomplish it in six and a half days is in contemplation.

First Railway Station at Geraldton, 1879.

In the future modern appliances may largely supersede the railway, but the dominant part it has played in developing the country during the past fifty years is beyond all question. The first railway lines in Western Australia were of a more or less temporary character, constructed by private enterprise for specific purposes. In 1871 the Western Australian Timber Company built and opened a line connecting their jetty at the Vasse with the timber forests twelve miles away, and Mason, Bird & Co. established a railway from the Canning to Rockingham, and a tramway from the Canning to the jarrah forests ; each intended to facilitate the transport of timber to the coast.

These private lines stimulated a demand for public railways for general transport purposes. The first projects submitted to investigation were a line from the capital to the York district, and a line from Geraldton to Northampton. It was decided to commence with the latter, its chief purpose being to cheapen the cost of transport of copper ore to the port of shipment. In 1873 a proposal to connect Perth with Fremantle and Guildford was also considered. Those were lean years in the Colony. A scourge of red rust had made its appearance in 1868 and in 1870 there was a severe drought. Revenue declined and expenditure increased, the gentle art of borrowing was uncultivated, and it was not until 1874 that a start was made with the Geraldton-Northampton line, and—although only 35 miles in length—it was not completed until 1879. In the latter year the first sod was turned for the railway from Fremantle through Perth to Guildford.

First locomotive used on Geraldton-Northampton Line.

A glance at the accompanying maps will serve to indicate the rapidity with which railway construction has proceeded of recent years. In 1890—the year in which Responsible Government was granted—there were only 430 miles of railway in the Colony, and the bulk of this was the Beverley to York line constructed on the land grant system by Anthony Hordern's company. The next decade witnessed

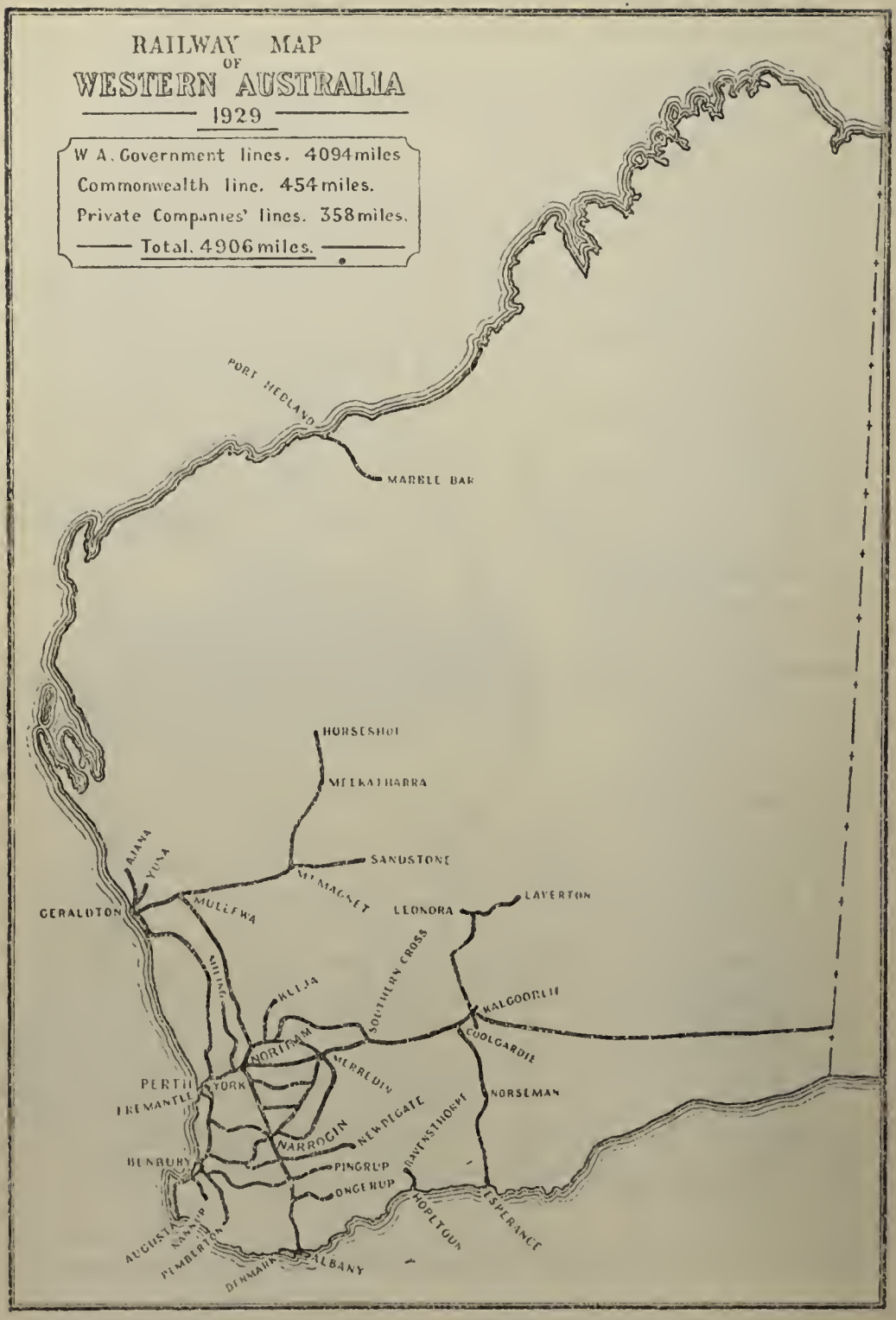
RAILWAY DEVELOPMENT

Lines opened up to 1879 – 35 miles.

Lines opened up to 1900 – 1632 miles

Lines opened up to 1890 – 430 miles.

Lines opened up to 1914 – 3187 miles


RAILWAY MAP
OF
WESTERN AUSTRALIA
1929
W.A. Government lines. 4094 miles
Commonwealth line. 454 miles.
Private Companies' lines. 358 miles.
Total. 4906 miles.
PORT HEDLAND
MARBLE BAR
HORSESHOE
MEEKATHARRA
SANDSTONE
ST. MAGNET
LEONORA
LAVERTON
AJANA
YUNA
GERALDTON
MULLEWA
MILING
KULJA
SOUTHERN CROSS
KALGOORLIE
COOLGARDIE
NORTHAM
MERREDIN
PERTH
FREMANTLE
YORK
NORSEMAN
NEWDEGATE
WARROGIN
BUNBURY
PINGRUP
ONGERUP
HOPETOUN
ESPERANCE
AUGUSTA
NANNUP
PEMBERTON
DENMARK
ALBANY

the linking up of Geraldton with the capital by the building of the Midland Company's line from Midland Junction to Walkaway—also on the land grant principle—and the construction of goldfields railways to Kalgoorlie and Menzies in the east, and Mt. Magnet and Cue in the North. Since the beginning of the twentieth century the development has been chiefly in the agricultural districts. Up to 1914 3,187 miles had been built, including two isolated lines: Port Hedland to Marble Bar in the North-West and Hopetoun to Ravensthorpe in the south.

By the end of 1928 the length of railways had increased to 4,906 miles, including the Commonwealth's transcontinental line of 454 miles from Kalgoorlie to the border of

Perth Railway Station, 1881.

South Australia, the Midland Company's line, and other unimportant private sections. With the exception of the Commonwealth line, which is on the 4ft. 8½in. gauge, all the West Australian railways are of the 3ft. 6in. gauge. Lines at present under construction—particularly that from Meekatharra, 100 miles east to Wiluna, designed to assist in the development of the important gold mines at the latter centre—will bring the total length of railways in

Western Australia up to well over 5,000 miles. This is equal to a mile of railway for each 81 persons in the State—probably a world's record. The lines owned and operated by the State Government alone exceed a mile in length for each hundred units of the population.

The adoption of 3ft. 6in. as the gauge for West Australian railways conforms with the Queensland practice, but varies from that of New South Wales, Victoria, and the southern portion of South Australia. However regrettable this variation may be, the narrow gauge has contributed largely to cheapness in construction, equipment and operation, and it would not have been practicable with a wider gauge to have served so extensive an area. The capital cost over the whole period has slightly exceeded £5,000 per mile : a very low figure when compared with the railway systems of other parts of Australia. In the early period of the Colony's expansion after the granting of Responsible Government, the railways not only paid their own working expenses and interest, but contributed to consolidated revenue a sufficient profit to meet the interest on the whole of the Colony's debt.

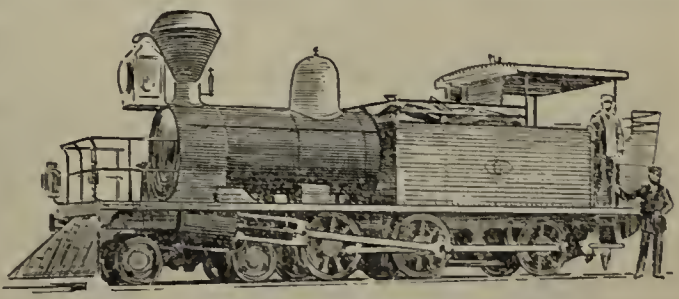
Perth Railway Station, 1929.

In more recent years, because of generally increased cost and the maintenance of cheap rates for the carriage of goods and passengers, the position has been less favourable, but with the exception of the difficult years during and immediately following the war—years in which railway systems all the world over lost heavily—the Western Australian railways have met their obligations, whilst affording to their patrons facilities that compare favourably with those of other portions of the Commonwealth. For 1928 the revenue exceeded the expenditure by £947,240,

equal to 4.28 per cent. on the capital cost. The accompanying table shows the result of the working of the Western Australian Government Railways for the first year of their operation, for the year in which Responsible Government was granted, for the year in which the Colony entered Federation, for the last year before the outbreak of war, and for 1928:

Year.	Miles open.	Capital Cost.	Passengers carried.	Tonnage carried.	Earnings.	Expenditure.
		£			£	£
1879 ..	35	152,741	1,037	1,651	1,608	2,335
1890 ..	188	833,083	251,898	60,692	45,113	51,640
1900 ..	1,355	6,856,363	6,225,068	1,384,040	1,259,512	861,470
1914 ..	2,910	15,873,852	19,208,420	3,170,144	2,257,011	1,572,008
1928 ..	3,977	22,130,077	16,032,536	3,697,648	3,858,051	2,910,811

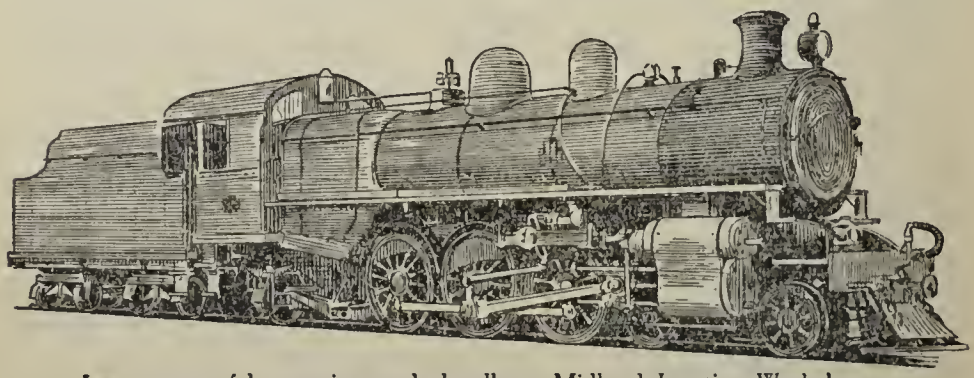
A noteworthy feature of the above table is the big decrease in the number of passengers carried in 1928 as compared with 1914, notwithstanding the substantial growth in population during that period. The motor car furnishes the explanation, and is responsible also for a much smaller increase in the tonnage of goods hauled than would otherwise have taken place. The motor car has not only replaced the horse, the camel, the donkey team, and other primitive methods of transportation in the outback districts, but it has become a serious competitor with the railway throughout the State, and more particularly for passenger traffic in the metropolitan area. Whilst it has given to the public facilities the railway cannot provide, it has created acute difficulties for a service that must long



First type of engine on Government Railways.

be required for the transportation of heavy produce over long distances—a service which competes with its more mobile rival under disadvantages that seem almost insuperable.

The motor car is largely a product of the last quarter of a century. The first motor vehicle driven by petrol was Daimler's in 1885, and in 1899 there were in France—the original home of the automobile industry—only 1,672 cars,



Latest type of locomotive made locally at Midland Junction Workshops.

and in the United States only 600. The first motor car imported into Western Australia arrived in 1903, but as late as 1905 no motor vehicles were registered by the City Council. For the year preceding the war the amount of traffic fees received by the City Council in respect of motor cars was only £1,260. On the 1st of January, 1920, the Traffic Act came into operation, under which the control of traffic throughout the metropolitan area was entrusted to the police. The revenue from motor licenses of all forms for the first year after transfer was less than £16,000; for the year ended June 30, 1928, it was over £116,000.

Only in the metropolitan area is the traffic controlled by the police, the Municipal Councils and Road Boards doing the work in other parts of the State. The research necessary to ascertain particulars of country cars suggests the need for a central register in which might be kept a complete record of all the motor vehicles in the State. It is not difficult to imagine an emergency in which the rapid mobilization of motor traffic resources might be of supreme importance, and the need of such a central register would then be felt acutely. The bulk of the cars—probably ninety per cent.—used in the State are of American manufacture,

and depend upon the regular supply of American parts. Should some military necessity arise it would be essential that the authorities should possess an accurate picture of transport resources, and lacking a central register this is unavailable.

At the close of the war in 1918 there were 2,538 cars and trucks in operation in the whole of the State ; by 1920 there was an increase of over 33 per cent. to 3,404. Tractors did not come into general use until after that date, and prior to 1924 there were not more than 100 of these in operation. The figures for 1928, so far as it is possible to obtain accurate returns, were :

1928.	Cars.	Trucks.	Buses.	Motor Cycles.	Tractors.
Metropolitan	10,723	2,465	68	3,553	....
Country	13,482	5,506	47	2,462	4,601
Totals	24,205	7,971	115	6,015	4,601

The total revenue received by the respective authorities (metropolitan and country) for vehicle and drivers' licenses for 1928 was approximately a quarter of a million sterling.

In the United States of America there is a motor car to each six of the population ; in Western Australia the record for cars and motor cycles combined, is one to each thirteen, or for motor cars only one to each fifteen. Although the population of the metropolitan area is almost equal to that of the rest of the State there are 30 per cent. more cars in the country districts, and more than double the number of trucks. In the last four years tractors have increased rapidly, indicating a marked development in power farming, for which the large areas and generally flat lands in the wheat belt are peculiarly adapted.

The growth in the imports of petrol and power kerosene of recent years has been amazing. In 1913 the consumption was :

Petrol	37,000	8-gallon units.
Power kerosene	50,000	8 and one-third-gallon units.

At that time the bulk of the power kerosene was used in the metropolitan area for pumping units that have since been replaced by electric motors. The consumption for the past four years has been :

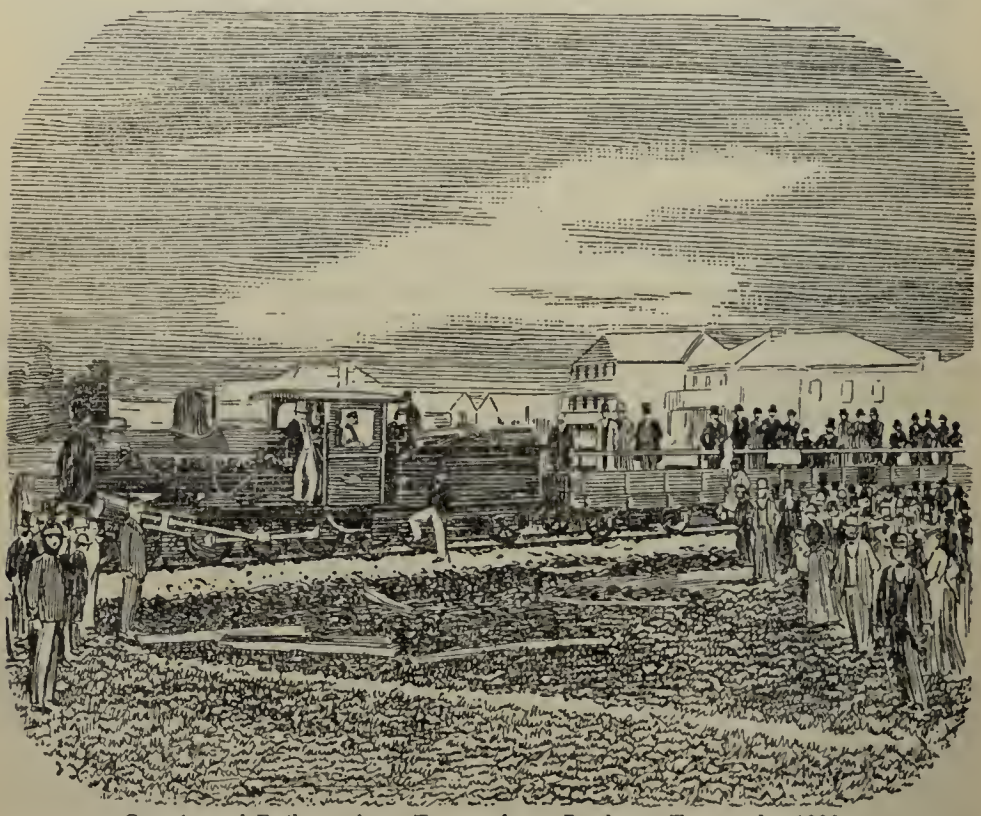
Petrol—8-gallon units :

1925.		1926.		1927.		1928.
785,500	....	1,109,000	....	1,531,000	....	1,859,000

Power kerosene, 8 and one-third-gallon units :

1925.		1926.		1927.		1928.
243,000	....	352,000	....	496,000	....	590,000

In 1928 the consumption of petrol was fifty times greater than in 1913, and the increase in the use of power kerosene was equally remarkable when allowance is made for the extent to which electrified units have replaced the stationary



Opening of Railway from Fremantle to Perth, at Fremantle, 1880.

engines for which power kerosene was previously used. The petrol consumption of 14,876,000 gallons, assuming an average of about 15 miles to the gallon, suggests that last year the people of Western Australia motored a total distance of 220,000,000 miles.

TRANSPORT

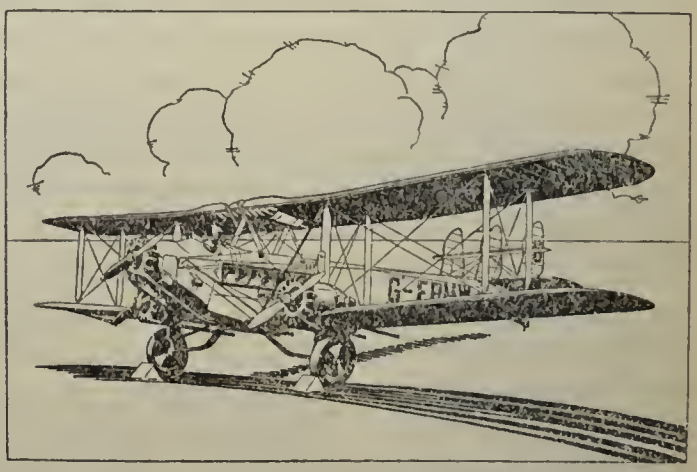
The motor car created a need for better roads. In the first twenty-two years of the present century the Governmental expenditure on roads and bridges throughout the State averaged about £60,000 per annum. It increased rapidly to £420,000 in 1925-26, and in the latter year the Federal Government decided to make available to the States a sum of £20,000,000 spread over a period of ten years, for main road construction, conditionally on the States setting apart a further £15,000,000 for the like purpose within the same period. From this fund Western Australia is spending £672,000 per annum and a new authority—the Main Roads Board—has been set up. Prior to Federal funds being made available comparatively little had been done in the construction of hard surface roads suited to modern motor traffic, but in the last two years there has been a great speeding-up, considerably over 1,000 miles of road being treated in some form or other during that period. Road construction to serve group settlements has involved a further expenditure of nearly a million pounds during the last four years.

After the motor car the flying machine. Commercial aviation was established in Western Australia in 1921, when the Commonwealth Government decided to subsidise aerial mail services. The West Australian Airways Limited, promoted by Major Brearley, obtained the first contract for a service from Geraldton to North-West ports as far as Broome. This linked up localities remote from railway communication, but soon the need for extending the service to Perth was recognised in view of the saving in time of aerial as against railway transport. The service carries out a regular weekly return trip of 3,000 miles as well as many special trips for business purposes and frequent emergency journeys to take medical aid to persons in isolated places.

Commencing with Bristol tourer aeroplanes accommodating two passengers and a pilot, it was soon found necessary to substitute De Haviland 50A machines with accommodation for four passengers. To the end of 1928 over 1,100,000 miles had been flown, while 10,795 passengers, 1,325,299 letters, and 194,623 lbs. of freight had been carried. The extension of the service from Derby to Wyndham,

via Fitzroy Crossing and Hall's Creek, has been agreed to by the Commonwealth Government and is anxiously awaited by the settlers in the remote portions of East and West Kimberley. Because of the length of mileage flown, the freedom from accident, and the absolute regularity of the service, West Australian Airways have gained a world-wide celebrity. No other service can furnish a better record.

In this Centenary year there has been inaugurated a further important air service: from Perth to Adelaide, also undertaken by West Australian Airways Limited. One trip is carried out weekly in each direction, connection being made at Fremantle with the weekly mail steamers to and from England. Triple-engined machines of the De Haviland Hercules type are employed with accommodation for 14 passengers in addition to the pilot. The passenger cabin is roomy and has adjustable seats. Although the bulk of the flying on this route is done during daylight, provision has been made for night flying, the route being equipped with beacons from Perth to Cook, a distance of over 900 miles, whilst the aerodromes at Perth, Kalgoorlie, and Forrest have been flood-lighted to permit of night landing and departure. The journey from Perth to Adelaide is accomplished between the morning of one day and the afternoon of the next, and the effect of the saving of time is to reduce by a whole week the period required to permit of the answering in Adelaide, Melbourne, or Sydney of mails received from England and other overseas countries.



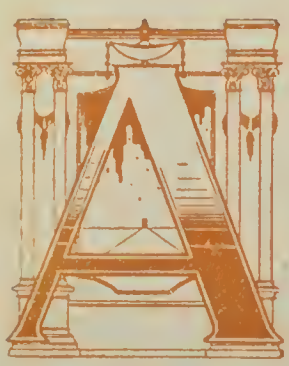
Aeroplane used in the Perth-Adelaide Service.

So much for the development in the transport of people and of goods. In 1829 the antique sailing ship, the primitive

vehicle drawn by horse, bullock, donkey, or camel, and differing little from those used by the ancients ; in 1929 the twenty-odd thousand-ton ocean liners ; the railway, the motor car, and the aeroplane. And what of the transference of words and thoughts ? The first telegraph line was laid and the first telephone was made within the memory of living men, and to-day all parts of the world are linked together by wireless connection enabling communication to flash round the globe quicker than thought. Puck would put a girdle round about the earth in forty minutes ; to-day forty seconds will suffice.

To a country like Western Australia, with its enormous area of nearly a million square miles, the facilities afforded by modern transport mean more, perhaps, than to any other part of the world. Much of the isolation of outback country life is removed and most of the practical difficulties in obtaining supplies and marketing products are swept aside. No other factor has played so big a part in the progress already made ; no other factor will contribute so largely to the infinitely greater development the coming years will witness. The elimination of distance, where distances are so vast, is a first step towards the complete exploitation of the country's resources.

XXXVI: BUILDINGS AND BUILDERS.



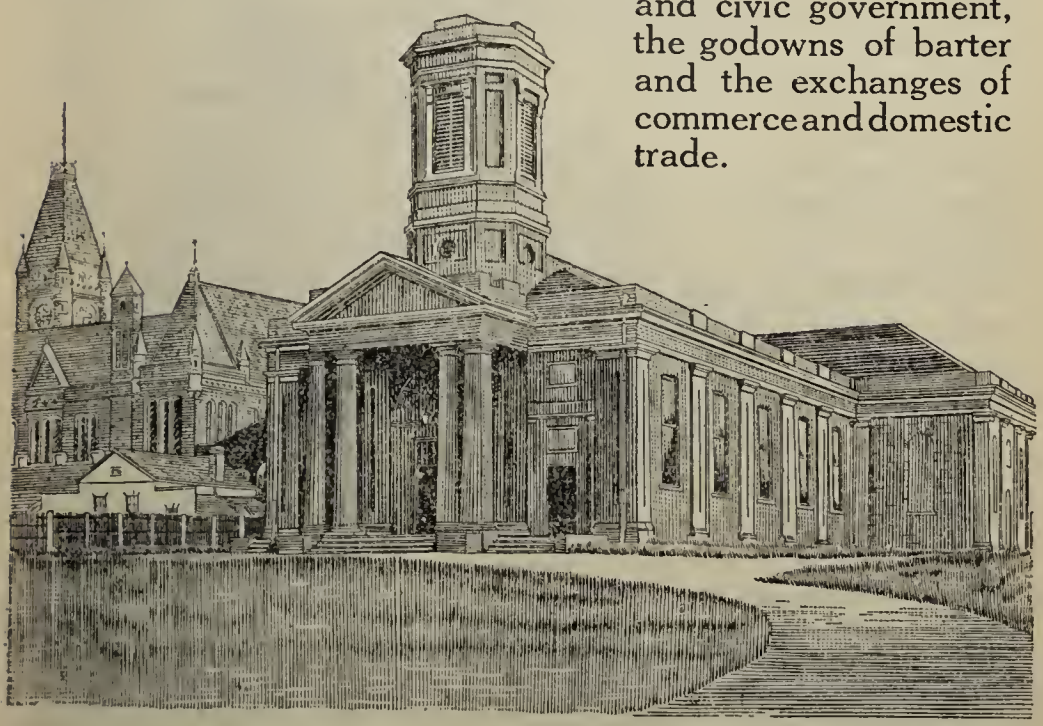
A PEOPLE is identified and recognised by its buildings. Civilisations achieve to renown, decay, and disappear from history, and are re-discovered and new pictured by evidence of remains of architecture. The manners and customs of races and peoples, their faiths and ethics, are revived, in intimate knowledge, by remains of their houses and cities, their temples and tombs and associated symbols of dedication, or the tool marks of artificers. The century of West Australian building work is replete with interest, though there is no need to excavate for its finding.

Inherently the building of the colonists was based on the traditions and current practices of the land from which they came, and in its development followed the same lines. Original conception in building is genius and exists but seldom. Building is imitative and builders are imitators. The first homes in the Swan River settlement were very simple, but not primitive, because in requirement and provision the form was based on the tradition of the British Isles. It was not in any way imitative of local methods, for no earlier people had left any architectural remains. The aborigines were nomads, seldom dwellers in caves, tented in lodges of poles and boughs, and sunken pits for weather shelter, materials of temporary endurance.

Preceding the inauguration of the Colony in June, 1829, the pioneer company and naval escort made rude shelter at Garden Island, thence to the mainland at Fremantle, and there took to making a wharf and a store house for a port for the new settlement, with a stockade of defence at Arthur's Head.

Secure at this base, and informed by exploration of the riverine valleys of Swan and Canning, on a day in August an expedition set out to found a city, Perth, on shelving

land buttressed by hills on east and west, and with wide waters on its southern frontage. There were made offices for administration, guard houses, and near clustering in the lines of future streets, among forests—many unearthed roots tell of giant trees—were built with a laborious adaptation of available boulder and bough the prototype of the halls, the soaring fanes of worship, the mansions of State and civic government, the godowns of barter and the exchanges of commerce and domestic trade.

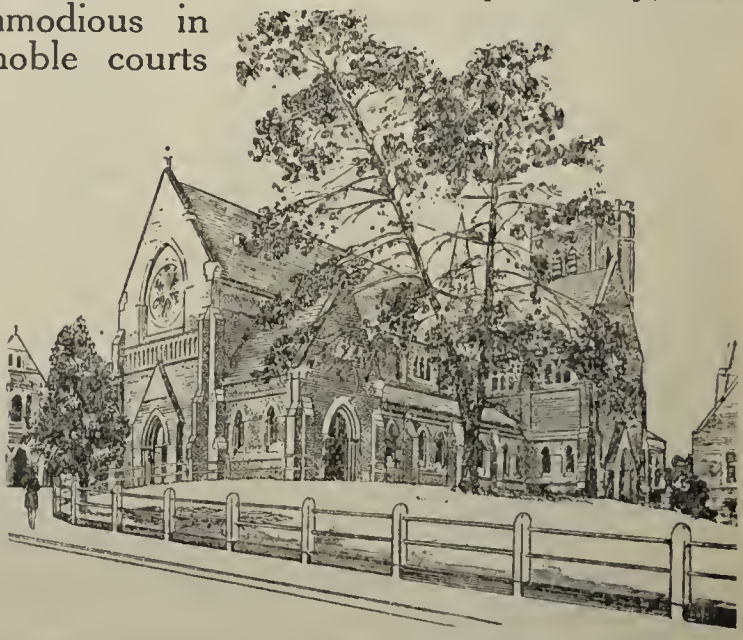


The old Anglican Church of St. George, built in the early forties, now the site of the Church Offices.

There are not complete records of the achievements of these early days, but some graphic sketches survive. Of a later time, when photography had come, the pictures are more numerous, and indicate, in sequence of development, the undeviating progress of the pioneers : audacious claimants of a great possession. As settlement spread throughout the Colony the builders made jetties, wharves, lighthouses, official and private residences, courts, churches, and schools.

The old passed to the new, and after fifty years of benevolent tutelage progress was accelerated in the 80's and with the influx of gold seekers in the early nineties the builders became the busiest of people.

In 1887 the dedicatory stone for Queen Victoria's Jubilee Memorial Library was laid with regal ceremony in St. George's Terrace, where now is the Technical School, but the stone was afterward removed to Beaufort Street, and there a beginning made by the erection of the south-east wing of a projected Victoria Public Library, Gallery, and Museum, commodious in planning in noble courts and cortile.



The Anglican Cathedral, built 1887.

At Perth a new Anglican Cathedral in first pointed Gothic had been erected and brought to consecration in 1887 and the old Church of St. George removed. This old church—a parish church then in the Diocese of Adelaide—with its columns in ante pediments and bell cupola, designed in the almost vernacular manner of the Georgian conventicle, was a not ungraceful monument of the resourceful energy and stout hearts of pioneer builders of the early 40's.

In St. George's Terrace were the east and west wings of Public Offices, housing the Treasury, Public Works, and Lands Offices, with the Old Post Office, ex-military barracks and armoury lying between. This bungalow-shaped building was removed in 1887 and a General Post Office with new distinction of standard gas lamps, and with central hall, and a congeries of office rooms, now the Treasury Pay Office, built between the already existing wings. The two wings were at that time in simple imitation of Tudor brickwork and cornice, similar to the Town Hall. Northward of this in Barrack Street, forming a link with the Town Hall, was a very picturesque guard house with an

open cortile. On this cortile, with some additions, a police station and magistrates' courts (now Industries and Tourists Office) were built and occupied until the erection of a new ornate freestone police building in Beaufort Street.

Then at the corner was, and happily, is, the Town Hall with its Tudoresque arcadings, machicolated walls and sturdy tower and campanile, all grouping in picturesque outline ; eastward in Hay Street the Chamber of the Legislative Assembly—now altered and used as the State Savings Bank, in the same good building, congruous with the Town Hall.

With political requirements of the Constitution came a need in the 90's for a chamber for the Legislative Council, which was contrived within the walls of an old bungalow-shaped building—now occupied by the Agricultural Department, in St. George's Terrace.

Among the buildings of skilful contrivance surviving from the early days, is the Round House on Arthur's Head built in 1830, now obsolete and near disappearing, associated with a lighthouse and quarters, port master's and marine cottage for the Governor, and some sort of arsenal. Arthur's Head was an acropolis for Fremantle and the Swan River settlement—without deistic attribute, but a place of consequence. The hill approach is ascended by many steps arranged symmetrically about the mouth of a tunnel pierced through the hill from High Street to a wharf, made, possibly, before the erection of the Round House, by a whaling company. The Round House (exactly its shape is octagonal) was a lock-up, with storied cells, around a middle court.

Another early building is the Old Mill at the peninsula of South Perth—erected in 1833 for flour gristing. It remains with head and gallery as of old, but without sail vanes. The prominence of its position in the riverscape, although slightly isolated from main settlement, made it the pivot of much interest and several stirring incidents.

Of the school buildings, there remains in Pier Street the early built school house, open roofed and spacious, made by the same builder as the Old St. George's Church, now utilised for the purpose of Turkish baths. Another school

Etching by H. Van Raalte.

THE TOWN HALL, PERTH,
Commenced May, 1867, completed June, 1870.

house of a later time is the building next to the Technical School in St. George's Terrace—a steep pitched roofed building—with a porch, with Governor Kennedy's monogram, well conceived in the admirable style of country Gothic. Of the old building until recently occupied by the High School near the Barracks, it should be said that it had been a hospital for the military before it was a school. It is not uninteresting to compare the spacious halls, class rooms, and dormitories of the new building of the High School (1920) on Wilson Street with those old buildings which once were sufficient for several distinguished head masters.

Entrance Porch, Supreme Court.

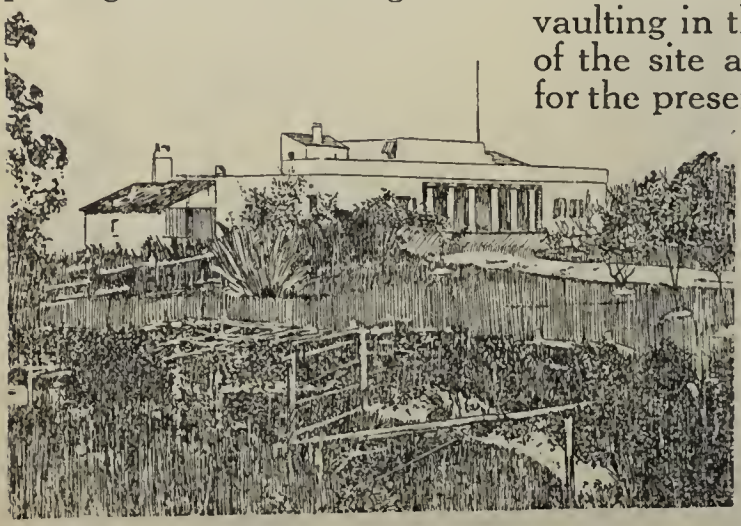
The beautiful little Tudoresque building now known as the "Cloisters," in the vista of Mill Street, was also a school house—now St. John's Hostel—and was founded by Bishop Hale.

Of an early period is the Old Court House near the Supreme Court—now used as the Arbitration Court—but originally the Court of Justice for the Colony, and perhaps used for religious services and other meetings between times. Like all the earlier buildings it is stuccoed, in the Georgian decadent manner, but academic in good proportions, with a Greek Doric motif. Nearby, until a few years ago, was the Commissariat Store—which was removed to make a site for the Supreme Court buildings erected in 1900.

In the early 30's, on the Government House Domain, a house for the Governor was erected near where the gate

lodge now is. It was a roomy house with a columned portico, stuccoed in the prevailing style. After some vicissitudes of service it was removed in 1887, an incident in a general improvement of the lay-out of the gardens. On the opposite side of St. George's Terrace, in a low bungalow-shaped building, were the first offices of the Colonial Secretary.

The availability and greater supply of labour and mechanics in 1860 is indicated by an undertaking involving putting a stream underground in culverts and considerable vaulting in the preparation of the site and foundation for the present Government House. This new house, which was completed in 1864, is designed in the masterly Tudoresque manner greatly affected at that period for country mansions in England. In this connection it is interesting to know that Colonel Henderson, R.E., Controller-General of the Imperial Establishment, who had at his command a detachment of Royal Engineers, had relations of intimate friendship with Sir Charles Barry, the architect of Westminster Parliament Houses, the greatest Gothic work of our time, and that Mr. R. R. Jewell, the Colonial Superintendent of Works, had been employed on some of Barry's works. It is more than probable that this connection may have enabled the obtaining, from Barry, of some designs which were utilised both for Government House and subsequently the Town Hall. But the drawings for the actual buildings were made in the Colony by the Royal Engineers, which may account for the obvious lack of skilful fluency in the details of these picturesque buildings. The ball-room at the west wing, built in the late 90's, in a manner of pretty

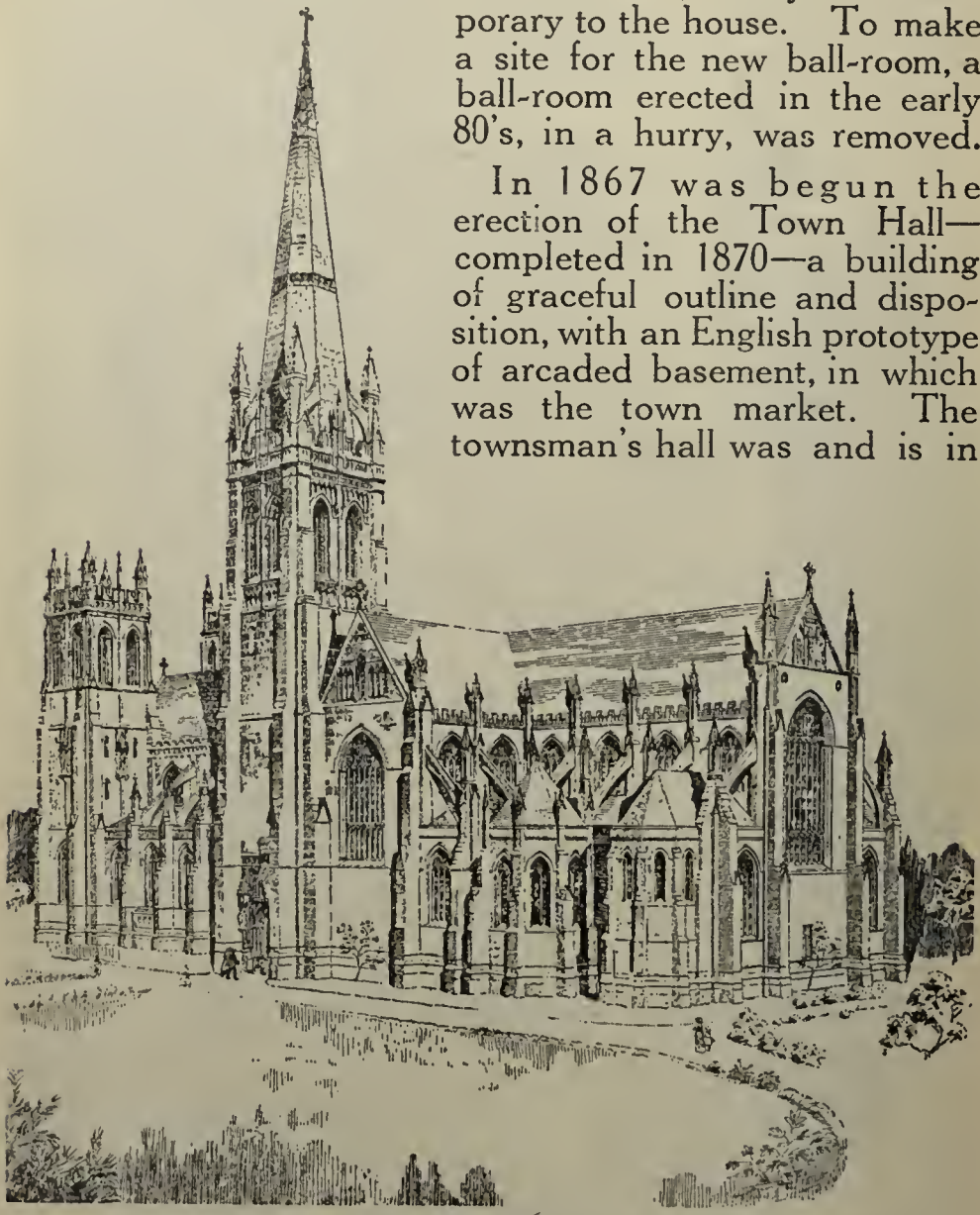


The first Government House.

Government House, Perth.
Presentation of Commissions to Officers of West Australian Volunteers, by Governor Hampton. From the *Illustrated London News* of March, 1864.

Renaissance with classic motif, is a handsome addition, although it may have been better to have imitated one of the numerous examples of halls extant, of style contemporary to the house. To make a site for the new ball-room, a ball-room erected in the early 80's, in a hurry, was removed.

In 1867 was begun the erection of the Town Hall—completed in 1870—a building of graceful outline and disposition, with an English prototype of arcaded basement, in which was the town market. The townsman's hall was and is in



St. Mary's Cathedral as it will be when completed. On an eminence at the eastern end of Murray Street.

an upper storey, of beautiful shape and proportion, with an open timber roof of admirable construction. The tower is a feature of unusual distinction, consonant with the conception of a capital town—with four faces of clock.

The Roman Catholic old Cathedral of the Immaculate Conception, placed in the eastern vista of Murray Street, on the hill of Stirling Square, was built by Spanish Benedictine Monks and Lay Brothers in the 60's, and although lacking the graces of academic detail, nevertheless is of good proportions and quaint invention.

Now an entirely new Cathedral, dedicated in St. Mary's name, is in the course of construction, designed in noble amplitude in pure Gothic, in the slender, graceful fifteenth century style, of freestone, with altars of onyx and walls and floors of marble and mosaic, with pictured glass in blazoned traceried windows which should give this new Cathedral a quality of ornate beauty unattained elsewhere in Australia.

The educational system of the Colony and State, by liberal and unique provision of free, bursaried classes from primary school to University, has resulted in fine school buildings in every hamlet and place, through the length and breadth of the land. The buildings of the schools are good, for example the campanile school house in James Street, built in the 90's, the schools at Fremantle, Albany, Bunbury, Northam, Kalgoorlie, built subsequently, and the schools connected with the Roman Catholic Orders, St. Brigid's and Clontarf, and in all the principal towns, are noticeable for their style and equipment. The High School buildings at Northam, Bunbury, Albany, and Kalgoorlie, the Modern School at Perth, the Training College at Claremont, Princess May's at Fremantle, are all of spacious accommodation in all divisions, and built in restrained good style with scholastic expressions.

The secondary schools associated with the several religious orders and denominations are of noticeable high quality; for example, the fine buildings of the Christian Brothers in St. George's Terrace, Perth, built in a late Renaissance Gothic style with an arcaded facade, with centre tower, the Methodist Ladies' College and Christ Church School at Claremont—the Anglican Grammar School at Guildford, with its ornately beautiful early Gothic chapel, designed by Walter Tapper, after the manner of the chapels of Oxford Colleges.

CHAPEL AT GUILDFORD GRAMMAR SCHOOL.
Built 1912-14.
Donated to the School by Mr. Cecil Oliverson, of Hyde Park, London.

And what of the men who were the designers and builders? What is remembered of their personalities, and their work, performed under conditions of great difficulty, is interesting. In the company of Captain Stirling's party which landed on 18th June, 1829, was Henry W. Reveley, who had inventive genius in mechanics and was appointed engineer to the Administration. Reveley had some training in architecture, had been in Italy and Greece, and was "skilled in Italian language; he expressed himself with difficulty when he attempted to write an English letter." Percy Bysshe Shelley proposed to improve his use of the English language by correspondence. He was a nephew of Shelley, and there are letters written by the poet to the engineer and by the engineer to the poet while Reveley was in Western Australia.

To Reveley may be ascribed the Round House at Fremantle, Old Government House, the Old Court House and others of the Georgian pseudo classic stuccoed buildings of which many have disappeared. His turn for mechanics seems to have been employed in attempts to develop water power, as he sluiced the waters derived from the swamps about the Perth Railway Station and made a water wheel on the bank near the Technical School in St. George's Terrace.

After Reveley there was R. R. Jewell of the Public Works Department, who until 1885 was Superintendent of Works. Although not academically trained to architecture, he had been associated with the work of Sir Charles Barry's office, and with rare instinct contrived buildings in Tudor like style—for example—the "Cloisters," in St. George's Terrace, the old Freemasons' Hall, now the Agricultural Bank, and the old Assembly Chamber, now the State Savings Bank, and the east and west wings to Government Offices in St. George's Terrace, greatly altered—perhaps not improved—by subsequent additions. Government House and the Town Hall owe much to his designing, also the Barracks, so skilfully placed in the vista westward of St. George's Terrace.

Associated with the Controller General's Department was J. Manning, as Clerk of Works, a very efficient constructor

under whose direction of the Imperial labour were erected Government House, the Town Hall, and the many works of the prison establishment at Fremantle, Perth and elsewhere.

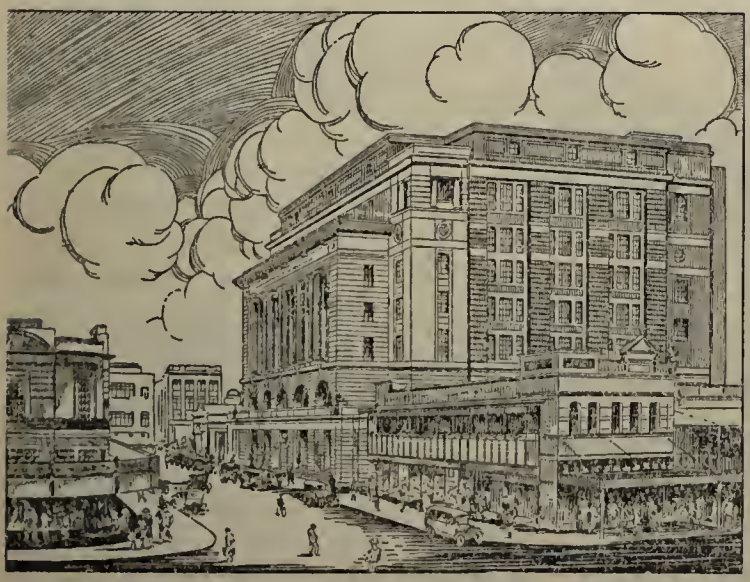
Then there was Francis Bird, Acting Superintendent of Works, an architect of London training, who made many utilitarian works, including mills and rail tracks for developing the timber exportation. A Civil Engineer, who practised

The Barracks at the top of St. George's Terrace, built in the sixties, now housing the Public Works Department.

with success, was J. W. Wright, and his special work in the world of sport is being continued by Powell & Cameron. In the middle 80's, in pursuit of the forward policy of Governor Broome, the Hon. J. A. Wright, a man of ability and Continental experience, was appointed by the Colonial Office as Director of Works, and G. Temple Poole as Colonial Architect and Assistant Engineer in Chief. Many works were initiated and carried out in their regime. Of the buildings made by the Public Works Office under the latter's direction were the completion of the Government Offices and General Post Office and Treasury Buildings in St. George's Terrace, the Lands Office and beginning of Public Office in Cathedral Avenue, the south-east wing,

first section, of the Victoria Jubilee Museum, the Administration Block of Perth Hospital, the Printing Office in Murray Street, the Mint and Observatory at Perth, Old Post Office, Fremantle, Court Houses at York, Bunbury, Albany and elsewhere; also several lighthouses, including Leeuwin and Rottnest, which are of versatile contrivance and elegance.

At the end of last century and for two decades of this century, the administration of the public buildings office was, at different times, directed by J. M. Grainger and Hillson Beasley, the former being responsible for the new ball-room at Government House—an elegant composition—the new Supreme Court, the incomplete Parliament House, the art gallery associated with the Victoria Jubilee Museum; whilst the latter built the public library in James street, and the Collegiate Gothic style Training College at Claremont. W. Burdon Hardwick, who succeeded Mr. Beasley, has achieved buildings of considerable success, eminently so in the large conception of the Modern School at West Perth, the technical schools at Perth and Fremantle, the country high school buildings, and the biological class-rooms at the University at Crawley.

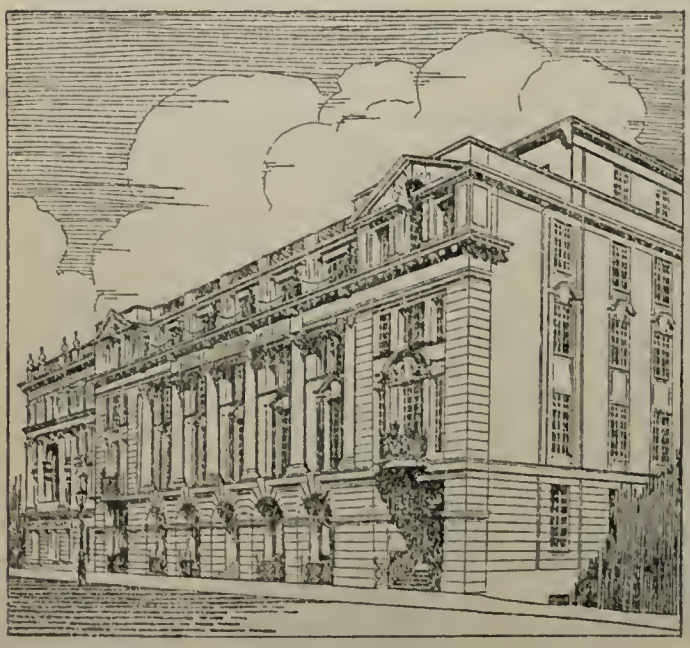


The Post Office, Forrest Place, Perth.
To the right is to be erected the Customs House and to the left the Commonwealth Bank.

With the erection of the new General Post Office in Forrest Place—started just before the war and completed in 1923—a new era of buildings of the monumental type may be said to have commenced. It is nine storeys high, of steel frame faced with granite from the Darling Ranges

and stone from Donnybrook. Designed by J. S. Murdoch, F.R.I.B.A., C.M.G., in a free treatment of the Greek Renaissance, it is by far the most ornate structure in the city.

Among the practitioners in architecture is Major General Sir Talbot Hobbs, K.C.B., K.C.M.G., whose fame in military fields is even greater than in the Courts of Civil Art, although to him and his erstwhile and present partners, E. Dean Smith and W. J. W. Forbes, the City of Perth and the towns throughout the State owe many banking houses, commercial and financial buildings. Particularly noticeable are the Halsbury Chambers, T. & G. Buildings, Surrey Chambers, W.A. Trustee and Economic Buildings, and Savoy Hotel, Weld Club, the Freemasons' Hall, St. George's Hall, Grammar School, Guildford, and, now in course of erection at Crawley, the Chapel and College of St. George.



St. George's House.

The Henry Triggs, father and son successively from the earliest days, covered a period of more than five decades. To the latter among extant buildings are some civic offices in a style which the Americans yclept Romanesque and also the Trinity Church and the part which made two storeys, of the Commercial Bank in St. George's Terrace.

Among the architects who were not resident in the Colony were Butterfield, who supplied the design for St. John's Church, Fremantle, in the early 80's, and Blackett, who designed the Anglican Cathedral; G. C. Inskip, of Melbourne, who designed the Union and Western Australian,

Banks, Perth; Walter Tapper, R.A., of London, who designed the Chapel at Guildford Grammar School, and Warwick & Hall, of London, who designed St. George's House in St. George's Terrace. Outstanding merit is found in some of their works, especially St. George's House, which stands almost superciliously handsome.

Many works of use and ornament, in a fine phase of Gothic for ecclesiastical edifices, and an adaptation of Roman Renaissance for civic buildings during the past three or four decades, have been made by Michael Francis Cavanagh. The fine Roman Catholic Churches at Fremantle and Kalgoorlie and the Redemptorist Monastery and Church, Perth, and the finer Cathedral of St. Mary, Perth, now being erected, are examples of the former, and the Commercial Union Building at Perth of the latter. The Christian Brothers' College, in the kinked junction of St. George's and Adelaide Terraces, the Archbishop's Palace, recast in an Italian manner, grouped with the Convent schools and chapels, make the precincts of the Cathedral a notable place.

In contemporary practice, G. Herbert Parry has made several country churches, as well as the new Perth High School buildings. The Burt Memorial Hall, grouped with the south-east transept and tower of St. George's Cathedral, makes a very congruous design.

A.M.P. Buildings.

Several buildings of exceptional refinement are the works of J. Herbert Eales and Eustace Cohen, both in their use of classic or Italian motif and of Gothic. Perth College chapel, and with great versatility, a church at Collie in domical Byzantine form, with apex murally adorned in fresco paintings and mosaic. The George Hotel, at Perth,

and many station residences and homesteads, and the exhibition buildings at Claremont and tennis pavilion at King's Park, are works of excellent quality.

At the corner of St. George's Terrace and William Street is the building of the Australian Mutual Provident Society, designed by Oldham & Cox, and built in Donnybrook freestone.

Among other works in the first decade of this century is Viking House, William Street, Perth, built by J. F. Allen in a style of strong vertical lines and a fenestration of Northern Gothic expression. On Monument Hill at Fremantle he has built a War Memorial and Pharos of almost national dedication. In the category of good city office buildings of handsome exterior is the Forrest Chambers in St. George's Terrace, the work of E. E. Summerhayes, to whose credit in early days were several public buildings at Coolgardie and the Goldfields.

Mention has been made of the Freemasons' Hall in Hay Street, as a building of character, and the same attribute is achieved in the work of P. W. Harrison in respect of the halls for the Masonic craft in many places. Some country places have fire brigade stations by K. C. Duncan, and J. L. Ochiltree has made for the City Council, in masterly solidity, the transformer stations for their electric system, and is now erecting McNess' Memorial Hall in Pier Street connected with the decorated Gothic Church of the Presbyterians, with its slender spire, the work of the late J. Hine.

The fine Hospital of St. John-of-God, Subiaco, conventual buildings and Churches at North Perth and Northam, and Church at Bunbury, all in expressive Gothic style, and Tattersall's Club at Perth, are works of R. J. Dennehy, and, to the designs of E. Le B. Henderson, many buildings have been erected, including schools and conventual buildings with chapels for Sisters of Mercy, near the Roman Catholic Cathedral at Perth.

The streets of Perth and other commercial places have several buildings by Harold Boas associated with Ednie Brown, including the halls and associated buildings for the local society of the Young Australian League in Murray Street. Merthyr House, St. George's Terrace, Perth, and the Eastern Extension Cable Station at Cottesloe,

the work of S. Rosenthal, indicate an equal expansion in the needs of industry and the service professions.

The hotels in the country towns and countryside of the State have a high reputation for completeness of design and equipment, and in this progress Bowser Cumpston has had much to do. W. G. Pickering has made many excellent hotels, and Road Board offices and halls at Merredin, Mt. Marshall, and elsewhere, handsomely supplying the needs of those districts. F. W. Steere has enriched the South-West with many buildings of secular and ecclesiastical character.

Theatres, both dramatic and cinema, have had characteristic development. In the 70's the then St. George's Hall in Hay Street (later Government Lithographic Office) was the House of the Drama and incidentally of Terpsichore. The design of the columns and pedimental facade was made by a distinguished amateur, Henry C. Prinsep. In the 80's, with courageous foresight, an imposing dramatic theatre, the Royal, in Hay Street, was erected and onward in the years, for the same proprietor—Mr. T. G. Anstruther Molloy, many times Mayor of Perth—His Majesty's Theatre, the first of concrete construction in Australia, was built by Adolph Wolffe ; then, in close sequence, came the Picture Theatres, including The Prince of Wales (T. Anthoness), the Grand, in Murray Street, by R. J. Dennehy, and lately the Ambassadors—a quaint conception in imitation of rococo Mexicanlike exterior and spectacular interior, and also the Hoyts Theatre, in William Street, by C. Bohringer ; a long list, which so far as the city is concerned, is closed for the

The Capitol Theatre and Temple Court.

century by the erection of the capacious, ornate, and almost monumental Capitol Theatre, in William Street, by G. T. Poole and C. F. Mouritzen.

In the suburbs and provincial towns none are so mean as not to have one or more cinema theatres, many of which are capacious and admirably designed to their purpose.

The most interesting of buildings with which the Centenary of the State is associated, the Hackett and Winthrop Halls of the University at Crawley, are little beyond the stage of visualised project, although the dedicatory stone was laid on 23rd April of the Centenary Year. The designer, Rodney Allsop, adapting a style vernacular in the Mediterranean Islands, has made a design now in course of realisation of interest and promise of beauty, as well as conformable to the ease and comfort, in handsome circumstance, of the Senate, the Dons, Graduate and Undergraduate.

This builders' story of progress and changes mentions, very cursorily, some of the edifices of public purpose or pseudo public purpose, situated, mainly, within the metropolitan area. Outside that area, with an extent of many hundreds of miles northward, southward, and eastward, there have been made buildings of commercial, industrial, and religious dedication, of proportional extent and interest. And in addition, are homes everywhere, in close clustered town, in spreading suburbs, on spacious countryside, eighty thousand houses and homes.

There are legends of settlers, newly landed, not wise to the occasion, driven by strait of need to utilise the cases in which had been packed their harps, spinets, and pianos, and their Tilburys. Spinets and Tilburys go hang ! Huts were of more use ! ! Of this there are no pictorial records. But in the early 30's Bussell and Molloy, two men of consideration and capable settlers, made homes at the Vasse, gave years of intensive labour into their enterprises, in quarry, lime burning, at forest felling, in sawpit with handsaw, shingle splitting. There are pictures of these century-old houses.

Compare the ease of and commodious production attained to-day. A machine, skilled labour, and six weeks,

and there are erected villas ready to wear. Elegant in shape, and luxurious in accommodation, with wide flung verandahs, of many rooms, water, electric cookers: domestic tasks lessened or lessening to minima.

Most of these homes, large and small, conform to the spreading bungalow layout, rooms all on one floor, induced by conditions of climate. The larger houses, when on narrow lands, are built with balconied second storeys. The architecture is well proportioned, designed congruous to aspect and surroundings, and the out-of-doors habits of a sunkissed people; utilising stone where stone is, and creamy stucco, bright bricks, and, occasionally, timber, with roofs of tiles, gabled or brimmed, wide projecting eaves. Among the smaller sort piquancy is often developed by imitations of quaint inventions, dubiously attributed to Mission or Californian inspiration. It were a vain search to find a people's housing more happily conceived, more expressive of their conditions, or comelier in the vistas of streets and landscapes.

XXXVII: SOME VALUED INSTITUTIONS.

OLLING in an easy chair, under a punka, after a Lucullan dinner, in his delightful bungalow in Southern Burma, a Scotsman who had spent nearly four-fifths of a long life in various parts of Britain's Eastern Empire, philosophised about national qualities, and declared that the surest measure of a people's civilisation is its capacity to voluntarily organise for community service. This capacity, nowhere else so highly developed as amongst British people, has been the outstanding characteristic of West Australian life. The oldest institution in the country is the Agricultural Society. Initiated in the first year of the Colony's foundation, its formal inauguration took place on May 28, 1831, when a memorial, in the handwriting of Thomas Peel, was presented to the Governor, setting out the constitution and objects of the so-called Farmers' Club: objects corresponding closely to those of agricultural societies to-day. Subscribers of £3 3s. became "hereditary" members, and the annual subscription was £1 1s.

In March, 1833, the *Perth Gazette* records a discussion at a meeting of the society on the advisableness of the Government guaranteeing a remunerative price for the farmers' surplus wheat, the cost of production being set down at 15s. per bushel. William Locke Brockman, Peter Broun, W. E. Tanner, T. N. Yule, Samuel Moore, E. B. Lennard, M. Clarkson, J. R. Phillips, Wm. Burgess, H. Bull, and John Hardey were the first executive officers, whilst Governor Stirling and Lieutenant-Governor Irwin were the Society's patrons. At a meeting held in January, 1834, when the decision to hold an annual show was reached, the attendance included Rev. J. B. Wittenoom, Joseph Hardey, Harris, Ridley, Whitfield, Lyon, W. K. Shenton,

C. Boyd, Spencer, Trimmer, Johnson, Leroux, Waylen, Major Nairn, and Dr. Collie. It is noteworthy that the majority of these are still represented by their descendants in the active life of the State, and more particularly in the development of its pastoral and agricultural industries.

The first show was held on November 6, 1834, in the neighbourhood of Guildford. It was in the nature of a picnic, preceded by a visit to surrounding farms, and followed by a banquet at Host Dodd's Cleikum Inn, occupying the site of the present home of Mr. J. T. Short, ex-Commissioner of Railways, on the bank of the Swan River. After the repast, three presents were made to the Governor: a specimen of Swan River tree bark hemp, collected by Mr. Drummond; a fine sample of Saxon wool from ewes bred in the Colony by Mr. McDermott; and a mangel wurzel weighing 37 lbs., grown by Mr. Bailey at Pelican Point, Melville Water.

From the outset the Agricultural Society concerned itself with all the affairs of the people—even to the extent of provoking a charge of "impertinence" from a member of the Colonial Executive, because of its desire to be furnished with a detailed statement of public revenue and expenditure. Many publications of the period refer in glowing terms to the work of the society in promoting the material well-being of the young settlement. Government policy was closely scrutinised, including duties of Customs—though these were very light compared with existing imposts, and rested chiefly on intoxicants. Their extent may be gauged by a paragraph in George Fletcher Moore's diary:

> To-day I paid a duty of £6 6s. for forty-two gallons of rum, and £14 14s. as the price of it. Think of this poured down the throats of the servants! Oh for the establishment of a temperance society!

To-day the same rum would cost about six times as much.

The society's shows, though under changing names, have been continuous since 1834. Some were held on the flats by the river side near the causeway, and later grounds were formed at Woodbridge, where the shows were held until 1904. In 1890 the society was granted

Royal letters patent, and in 1894 it was incorporated under the name of the Royal Agricultural Society of Western Australia. In 1905 the show was first held on the present property at Claremont on which the Society has expended over £50,000. The contour of the grounds forms a natural amphitheatre, surrounding the arena. There are no better show grounds in Australia, though recent rapid growth, in exhibits and patronage, has created the need for further extension.

The annual show in 1928 was termed the 52nd. For many years, whilst held at Guildford, the show was under the auspices of the Swan Agricultural Society. In the seventies a rival institution was formed, called the Western Australian Agricultural Society. Subsequently the two bodies amalgamated under the name of the latter, and the annual shows have since dated from that event, although the show of 1928 was the 95th of what has been practically a continuous body. The attendance during the week of the 1928 show aggregated 116,230, the record for a single day being 58,475. The exhibits totalled 6,796 and nearly £4,000 was distributed in prizes, in addition to many valuable trophies. The revenue of the society for the year exceeded £16,000 and the net profit was nearly £4,000. The surplus of assets over liabilities exceeds £33,000. For the Centenary year the President of the society is Mr. T. H. Wilding.

An Agricultural Society was formed in York in 1841 and another in Toodyay in the early fifties, whilst Northam, Geraldton, Bunbury, and other centres followed. The York Society for many years fully rivalled in importance the metropolitan institution. To-day there are seventy societies in the State, and for the Centenary show of the Royal, district exhibits are being organised for display in a new hall erected for the purpose at a cost of £10,000. For the purpose of these displays the State has been divided into six districts: the northern with Geraldton as its centre; the central (Northam); the eastern (Kellerberrin); the great southern (Wagin); the south-western (Donnybrook); and the metropolitan (Perth). The prize money to be distributed this year exceeds £6,000, in addition to trophies.

A subject that occupied the attention of the Agricultural Society from its inception was the need of orderly finance for the farmer. The earlier settlers brought with them considerable resources, and built up substantial assets, but it was quickly realised that without credit against security there could be little progress. In May, 1832, a prospectus for the establishment of a bank was submitted to the Governor, with a request for an advance of £5,000 from the Treasury on the security of twenty-five responsible persons. Commenting on this proposal Moore points out that settlers were borrowing at as much as 25 per cent. interest, so that money loaned by the Government at five per cent. might be invested with advantage to all parties. The Governor's instructions prevented him from acceding to the request, and he suggested that the colonists should raise the money by private subscription. An effort in this direction failed: the settlers were all borrowers, and the few colonists who might have subscribed were presumably amongst those who lent at 25 per cent.

Promissory notes formed the general currency, even for sums as small as 2s. 6d. It is recorded that one Woods—a man of an ingenious turn of mind—bought up all the white metal teapots, spoons, etc., and minted them into imitations of a current coin of India, the dump. For six months these circulated freely, outrivalling the promissory note in popularity, and then an unappreciative judicial tribunal sentenced Woods to seven years' transportation to Van Diemen's Land. Moore, in his diary under date April 25, 1833, writes:

> In the evening Mr. (unhappily the name is omitted) came here on business. I do not well know what to think of him: he was a man of war (I don't mean a wooden one), his words are those of a man of peace; he speaks at times as if he were averse to litigation, yet he is continually involved in it; professing puerile simplicity yet arguing with the casuistry of a Jesuit; a linguist (he suddenly asked me the other day what I thought was the force of the particle "Eth," in the first verse of the Hebrew Bible); a great financier, who has proposed a desirable scheme of a bank which was to enrich us all—the only requisite being that the Government should lend us £100,000!! Yet with his varied talents he is a mere boatman plying on our river.

It is an instructive sidelight on the manner of men that went to make up the infant community.

About the middle of 1833 the Agricultural Society formed the Swan River Barter Society. Each member was allowed fifty promissory notes of a face value of £1 each, and every member agreed to accept the notes in lieu of cash. The system served some good, though necessarily limited, purpose. It was the forerunner of a practice very generally in vogue up to the early nineties, when an order on Monger of York or Throssell of Northam was accepted with greater alacrity than a sovereign; a practice that still maintains throughout the Kimberleys, where there is no bank north of Broome, and where the "shin-plasters" of Connor, Doherty, and Durack, and of many hotel and store keepers, form the regularly accepted currency.

Banking proper came four years later. The prospectus of the Bank of Western Australia was issued in January, 1837, nominal capital £10,000, subscribed capital £2,500. The directors were: George Leake (Chairman), W. L. Brockman, Saml. Moore, Peter Broun, L. Samson, R. Hinds, and W. Habgood. Mr. Marshall MacDermott was managing cashier, and the solicitor was Mr. W. J. Lawrence. The partners were seventy-five in number and were representative of all parts of the Colony: Perth, Fremantle, Guildford, Canning, Melville Water, Swan, Albany, Augusta, and York. Business was commenced in June, and on the 10th of August there was furnished to the Colonial Secretary a return showing:—

THE QUARTERLY AVERAGES OF THE WEEKLY ASSETS AND LIABILITIES OF THE BANK FROM 28TH JUNE TO 26TH SEPTEMBER, 1837.

	£	s.	d.		£	s.	d.
Notes in circulation	1,412	0	0	Specie and Treasury Bills	3,575	18	4
Deposits	2,145	5	3	Discounted Bills	1,076	18	0
				Dishonoured Bills	*Nil*		
	£3,557	5	3		£4 652	16	4

The bank made slow, but steady progress, the return for the March quarter, 1841, showing:—

	£	s.	d.		£	s.	d.
Notes in circulation	4,355	0	0	Specie	2,688	19	5
Deposits	6,999	13	6	Bills	13,321	2	9
				Bills Dishoured— (£367 11s. 6d.)			
	£11,354	13	6		£16,010	2	2

That statement closed the career of the Bank of Western Australia, after an existence of a little less than four years. The improved position of the Colony had attracted the Bank of Australasia, and it absorbed the local institution. Many of the shareholders were opposed to the transfer and immediately established the Western Australian Bank, which for three-quarters of a century played a dominant part in the finance of Western Australia and which was recently absorbed by the Bank of New South Wales. There were many people in the State who regretted this latter absorption almost as keenly as did those who broke away from the amalgamation of 1841.

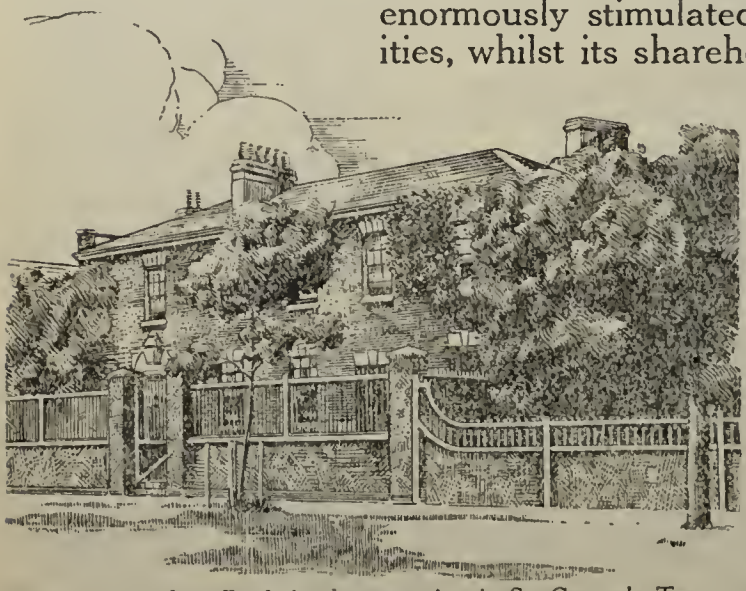
The first Western Australian Bank, 1845, corner of St. George's Terrace and Pier Street.

That portion of the Register of Banks in the Colonial Secretary's department which is devoted to the affairs of the Bank of Western Australia, contains no reference to its absorption by the Bank of Australasia. On one page there is the return of the Bank of Western Australia for the March quarter of 1841, and on the next the return of the Western Australian Bank for the September quarter of the same year—apparently one quarter was missed in the reconstruction—with a new list of shareholders. The first directors of the Western Australian Bank were: J. S. Roe, W. Tanner, W. J. Lawrence, E. Hamersley, R. Hinds, J. Stringer, and G. F. Stone. Of these Mr. Hinds had been a director of the former institution. Richard Wells was the new cashier, Mr. MacDermott having gone over to the Bank of Australasia. The capital was £20,000.

The judgment of those who determined on maintaining a local banking institution was justified by a dividend of 15 per cent. in the first year of its operations, and by the fact that after a few years the Bank of Australasia vacated the field. As years went by other companies with headquarters in London or the eastern colonies, extended their

operations to Western Australia, the National Bank of Australasia, the Union Bank of Australia, and the Bank of New South Wales each opening branches in Perth before the advent of Responsible Government. The Western Australian Bank maintained its prestige against all competition, and the value of its service to the Colony is beyond estimate.

In the early days of the goldfields the directors exhibited courageous enterprise, sound knowledge, and steady confidence. Branches of the bank were established wherever there was a possibility of rendering service to the people. Mining, pastoral, and agricultural development were enormously stimulated by its activities, whilst its shareholders profited substantially, dividends being maintained at the rate of about 17 per cent. Whilst no figures can aptly illustrate the measure of its usefulness, some conception of its growth as an institution may be obtained from a comparison of the quarterly return for December, 1848, with that for March, 1927, the last quarter before its absorption by the Bank of New South Wales :—



Western Australian Bank in the seventies, in St. George's Terrace, north side, between William and King Streets.

DECEMBER, 1848.

Liabilities.	£	Assets.	£
Notes in circulation	3,093	Bills receivable	10,231
Deposits not bearing interest ..	13,395	Cash credits, specialty securities, and other debts	6,724
Deposits bearing interest ..	150	Specie, Treasury bills, notes of other banks, and balance at agents	7,815
		Landed property	1,050

MARCH, 1927.

Liabilities.	£	s.	d.	Assets.	£	s.	d.
Notes in Circulation—				Coined Gold and Silver and other Coined Metals	345,630	13	2
Not bearing Interest	11,356	7	0	Gold and Silver in Bullion and Bars ..	30,339	1	8
Bearing Interest				Australian Notes and Cash at Commonwealth Bank ..	307,811	15	8
Bills in Circulation—				Public Securities ..	187,514	12	0
Not bearing Interest	33,691	7	5	Landed Property, Bank Premises	113,923	14	2
Bearing Interest				Balances due from other Banks	605,034	9	4
Balances due to Other Banks ..	48,302	5	10	Notes and Bills of other Banks	43,733	16	7
Deposits— £ s. d.				Amount of all Debts due to the Bank including Notes, Bills of Exchange, and all Stock and Funded Debts of every Description, excepting Notes, Bills, and Balances due to the said Bank from other Banks ..	3,487,933	2.	11
Not bearing Interest .. 1,868,208 15 2							
Bearing Interest 1,315,598 0 6							
	3,183,806	15	8				
Total Amount of Liabilities	£3,277,156	15	11	Total Amount of Assets	£5,121,921	5	6

Amount of the Capital Stock paid up at the close of the Quarter ended 31st March, 1927	£700,000.
Rate of the last Dividend declared to the Shareholders ..	15s. per cent. p.a.
Amount of the last Dividend declared	£52,500.
Amount of the Reserved Profits at the time of declaring Dividend	£1,310,850 18s. 6d.

From its inception the Western Australian Bank had the services of many of the most progressive men in the Colony. Two names will always be associated with its activities during the hey-day of its prosperity—the late Sir William Thorley Loton, for many years managing director, and Mr. H. D. Holmes, who was general manager for 37 years.

The Perth Chamber of Commerce, founded during the first year of Responsible Government, is another institution that has rendered valuable service to the community. The first President was the Hon. Sir George Shenton, M.L.C. Unfortunately its earlier records have disappeared. the first report available being that for the year ended June 30, 1896. The then President was the late Hon.

George Randell, a man who for many years did yeoman service for the city. Reference is made in the report to "the remarkable increase in land values, especially in Perth." After the lapse of nearly seventy years land in the main street had advanced from an almost nominal figure—the traditional bottle of rum for a quarter acre block—to nearly £150 per foot. In the early part of 1929—33 years later—£140,000 was refused for a corner block with a frontage of 101 feet to Hay Street and 122 feet to William Street, and an area of 1 rood 6 perches. The value of Hay Street land centrally situated is now generally assessed at about £1,200 per foot.

In 1896 the Chamber had eighty members, it now has over 200; its revenue was then only £100 a year and has now grown to over £700. These figures have little relation to the importance of its activities. All questions of commercial law and practice pass under its review, public policy is closely scrutinised, its chief aim being to ensure the highest standard of commercial morality in the daily affairs of the people. It is largely due to its wisdom and influence that such insidious abuses of sound economic principles as the Cash Order System—rife in other portions of Australia—have been denied a footing in the West. Affiliated Chambers have been established at Fremantle, Albany, Bunbury, Kalgoorlie, Northam, and Geraldton, and the usefulness of the organisation is steadily expanding. Each year it publishes an exhaustive table of statistics compiled by the Government Statistician, Mr. S. Bennett, F.I.A. The President for the year is Mr. B. Rosenstamm: one of its oldest members.

The Western Australian Chamber of Manufactures was formed in 1899, its first President being the Hon. W. J. George, C.M.G., for many years one of the most active members of the political and industrial life of the country and still the senior member of the Legislative Assembly. It now has a membership of about 200, steadily increasing, under the Presidency of Mr. L. B. Bolton. In encouraging and assisting the development of secondary industry in the State the Chamber is confronted with many and great difficulties. The protective policy of the Commonwealth enhances the price of raw material and keeps the cost of

production at a high level, whilst affording no safeguard against the competition of factories in the Eastern States. Many of these were established when machinery and other requirements were cheaper, and they have a larger local market. Economists are generally agreed that the tendency of Australian tariff policy has been to intensify the advantages of central location, so that protected industries have concentrated in the more populous States, only some special circumstances permitting their occasional establishment elsewhere.

At present the State's manufactories are confined largely to natural industries which would exist irrespective of the tariff, such as forest saw mills, flour mills, electric light and power works, superphosphate works, printing establishments, and the hundred and one forms of manufacture that are almost necessarily carried out on the spot. To most of these the tariff is a direct burden. A glance at the table published in the statistical chapter indicates a severe limitation of those industries in which the place of production is not chiefly dependent on the immediate vicinity of the market. Woollen mills have been recently erected at Albany, and with the most complete and modern equipment are producing goods of the highest quality.

Efforts to establish jam factories have met with many reverses, due largely to the dumping of Eastern States' products; butter factories are making steady head-way. More and more of the requirements of railways and tramways are being made locally, the quality of the work bearing comparison with the best that can be imported. The assembling and repairing of motor cars and the building of motor bodies each year afford additional employment. Amongst farm requirements the making of wire netting and Cyclone fencing has become an important industry. The State still imports much of its requirements in boots and shoes. Confectionery, biscuits, cigarettes, soap, cement goods and cement pipes, leather, asbestos sheeting, and other industries are steadily developing, whilst porcelain ware of very high quality has established a market in the Eastern States as well as locally.

As far back as the forties a soap factory was established at Champion Bay (Geraldton), and from time to time fish

preserving works have been operated at various points along the coast line with indifferent success. In 1870 the secondary industries of the Colony included two tanneries, a rope factory, two coach builders, twenty-four flour mills, and three breweries. Boat building was probably a more important industry locally then than now. At the establishment of Responsible Government the industries were still confined to what might be called elementary essentials. There were ten aerated water factories, three boot factories, one biscuit factory, four fruit preserving works, three furniture factories, three confectionery factories, thirteen printing works, mostly in the city, and an essential oil factory operating at York.

During the nineties progress in the development of manufacturing was fairly rapid, but the disappearance of the local tariff, after the establishment of federation, caused a halt. In the period from 1900 to 1914 the number of factories increased only from 632 to 804 and the number of employees from 11,166 to 17,656. Since the war, with the steady growth of population and the rapid development of rural industries, progress has been a little more rapid, and on sound lines. During 1928, 1,398 factories employed 21,307 persons, distributing £4,501,407 in wages and giving an added value to the goods handled of £7,690,123. The gross value of the output for the year was over £16,000,000. Western Australia still imports every year many million pounds' worth of stuff that could be grown or made locally, and there is little doubt of the determination of the people to become more and more self-reliant. Growing population, with a resulting expansion of the local market, is the factor that will chiefly contribute towards the increase of secondary industries.

Centenary Postage Stamp.

XXXVIII: FACTS AND FIGURES.

TATISTICS illustrating the progress of Western Australia over the last hundred years will be found in the appended tables. For the purposes of comparison seven periods have been selected, each marked by an event of outstanding importance in the history of the country:—1829, the year of the Colony's establishment; 1850, when it passed, for a period of eighteen years, from a free Colony to a penal settlement under the British Crown; 1870, when Representative Government was first established; 1890, the inauguration of full Responsible Government; 1900, when the Colony, entering Federation, became a State within the Commonwealth of Australia; 1914, which witnessed the outbreak of the great war; and lastly 1928. In a few instances circumstances have necessitated a departure from these dates.

POPULATION. (Exclusive of Aborigines.)

Year.	Males.	Females.	Total.
1829	769	234	1,003
1850	3,576	2,310	5,886
1870	15,474	9,610	25,084
1890	26,794	19,496	46,290
1900	109,923	69,785	179,708
1914	178,978	143,111	322,089
1928	220,209	185,664	405,873

The rate of increase in population in the year 1928 was 3.46 per cent., being considerably higher than that of any other Australian State and about 1¾ per cent. higher than the Australian rate generally. The numerical increase for the year was 13,581, of whom 8,517 represented the excess of arrivals over departures. Of these 4,520 were assisted or nominated immigrants. For the year the birth rate was 21.81, death rate 9.12, and marriage rate 8.29 per thousand of mean population. The number of males in excess of females in each hundred of the population has decreased from 11.14 in 1914 to 8.51 in 1928.

PUBLIC FINANCE.

—	Revenue.	Expenditure from Consolidated Revenue.
	£	£
1829	4,273	3,769
1850	19,138	16,657
1870	98,132	113,046
1890	414,314	401,737
1900*	2,875,396	2,615,675
1914*	5,205,343	5,340,754
1928*	9,807,949	9,834,415

*Year ended 30th June.

From time to time there have been considerable deficits, particularly during the war and for several years after its conclusion. One effect of these deficits—aggregating to June 30, 1928, £6,295,849—is illustrated in the accompanying table showing the difference between the total of the public debt, and the amount of money spent on works and undertakings on loan account :—

Year.	Public Debt.	Expenditure from Loans.
	£	£
1890—To December 30	1,367,445	1,339,743
1900—To June 30	11,674,640	10,390,840
1914—To June 30	34,420,181	30,645,818
1928—To December 30	77,339,985	71,881,518

As against this indebtedness, there was at the end of 1928 an accumulated sinking fund, in the name of the State's trustees in London, amounting to over £9,000,000, leaving a net indebtedness of £68,340,000, or £168 7s. 6d. per head of population.

Following a wise precedent set during the Forrest administration, every Western Australian loan floated on the London market has carried a sinking fund, and contributions to this sinking fund were maintained in full during the war and the difficult years immediately succeeding it. The accretion of sinking fund exceeded the deficit resulting from excess of expenditure over revenue in that period.

The purposes upon which loan money has been expended, and the approximate amounts, to the end of 1928, have been :—

	£
Railways, Tramways, and Electric Power Station ..	24,093,602
Electric Telegraphs	332,293
Harbours, Rivers, and Lighthouses	5,207,258
Roads and Bridges	1,452,127
Public Buildings	1,464,537
Water Supply, Sewerage, etc.	8,621,736
Development of Goldfields and Mineral Resources ..	2,329,273
Development of Agriculture	24,514,544
Immigration	489,230
Miscellaneous	3,376,918
Total	£71,881,518

Under the heading "Development of Agriculture" is included the amounts advanced to settlers by the Agricultural Bank and the Industries Assistance Board, and for soldier settlements, which amounts are recoverable.

CHEQUE PAYING BANKS.

Year.	Banks.	Average Amounts. Deposits.	Liabilities.	Assets.
	No.	£	£	£
1829	..	(Not known)	..	..
1850	..	do.	..	..
1870	..	do.	..	..
1890	5	952,084	1,016,833	1,801,976
1900	6	4,390,511	4,836,886	5,742,012
1914	7	6,893,715	7,304,753	13,375,743
1928	10	14,675,303	16,128,904	21,785,112

SAVINGS BANKS.

Year.	Banks.	Depositors at end of Year.	Amount due to Depositors.	Average Amount per Depositor.
	No.	No.	£	£
1829	(Not known)	(Not known	(Not known)	(Not known)
1850	do.	do.	do:	do.
1870	do.	do.	13,582	do.
1890	20	3,014	34,616	11·483
1900	67	33,646	1,299,144	38·613
1914*	374	116,000	4,902,439	42·262
1928*	565	286,425	10,724,043	37·440

* Including Commonwealth Savings Bank in this State, but exclusive of School Penny Savings Banks.

In the school penny savings bank, 52,226 children have deposits aggregating over £90,000. Exclusive of these depositors in penny banks, 70.5 per cent. of the total population of the State have deposits in the Commonwealth or State savings banks, and the amount due to depositors in the three types of savings banks is equal to more than £26 for each man, woman, and child in the community.

LIFE ASSURANCE (WESTERN AUSTRALIAN BUSINESS) IN EXISTENCE AT THE END OF YEAR.

Year.	No. of Companies.	Assurances.		Endowments.		Annuities.	
		No. of Policy Holders.	Sum Assured.	No. of Policy Holders.	Sum Assured.	No. of Policy Holders.	Annuity per Annum.
			£		£		£
1890	No record available		..	..	..	..	..
1900	Ordinary .. 7	10,830	3,402,455	518	55,775	3	341
	Industrial .. 1	7,175	202,417	599	17,141	..	..
1914	Ordinary .. 9	27,333	7,644,139	2,575	276,812	17	972
	Industrial .. 4	37,087	1,045,523	3,889	88,084	..	..
1927	Ordinary .. 15	48,826	17,168,691	5,980	970,564	33	1,656
	Industrial .. 6	90,414	3,698,759	6,302	322,282	..	..

LAND ALIENATED FROM CROWN.

Year.	Acres.
1829	525,000
Total to end of 1850	1,329,821
Do. do. 1870	1,465,118
Do. do. 1890	5,154,673
Do. do. 1900	3,462,490
Do. do. 1914	7,910,417
Do. do. 1928	13,238,500

In addition 22,094,561 acres were in process of alienation at the end of 1928, and 241,115,647 acres were held under pastoral lease or license. The area still unselected amounted to 348,140,092 acres.

AREA OF LAND UNDER CROP.

Year.	Acres.	Year.	Acres.
1829 ..	*Nil*	1900 ..	201,338
1850 ..	7,419	1914 ..	1,867,547
1870 ..	54,527	1928 ..	3,720,100
1890 ..	69,678		

Year.	WHEAT PRODUCTION.		OAT PRODUCTION.	
	Acres.	Bushels.	Acres.	Bushels.
1829	(Not known)	(Not known)	(Not known)	(Not known)
1850	4,416	do.	140	do.
1870	26,640	316,769	2,095	39,974
1890	33,820	467,389	1,934	38,791
1900-01	74,308	774,653	4,790	86,433
1913-14	1,097,193	13,331,350	133,625	1,665,681
1928-27	2,998,523	36,370,219	235,469	2,922,865
1928-29	3,343,197	33,827,601	325,657	3,552,654

Flour was milled in the State from the earliest years of the Colony's history, but the first recorded production was 7,314 tons in 1897. For succeeding periods the totals were :—

	Flour Tons.
1900	12,539
1914	61,922
1928	127,246

LIVE STOCK.

Year.	Horses.	Cattle.	Sheep.	Pigs.
	No.	No.	No.	No.
1829	57	204	1,469	106
1850	2,635	13,074	128,111	3,190
1870	22,174	45,213	608,892	12,927
1890	44,384	130,970	2,524,913	28,985
1900	68,253	338,590	2,434,311	61,740
1914	161,625	863,835	4,456,186	59,816
1928	(163,000)	(850,000)	(8,927,929)	(70,000)

The figures in parentheses for 1928 represent round numbers estimated on the actual figures for 1927, and on the increase or decrease during the year anticipated by competent authorities.

MANUFACTURING ESTABLISHMENTS.

Year.	Factories.	Persons Employed.	Salaries and Wages paid.	Value of Production.
	No.	No.	£	(Added Value.) £
1829	(Not known)	(Not known)	(Not known)	(Not known)
1850	23	do.	do.	do.
1870	66	do.	do.	do.
1890	175	do.	do.	do.
1900	632	11,166	1,294,278	(Not available)
1914	804	17,656	2,346,946	3,576,177
1927 *	1,216	20,417	4,151,413	6,907,023
1928	1,398	21,307	4,501,407	7,690,123

* Period altered from Calendar to Fiscal Year.

The figures given as value of production represent the added value given to the raw material in the process of manufacture. The gross value of the output of manufacturing establishments in 1928 was nearly £17,000,000.

The following table indicates the nature of the industrial establishments in which this production was obtained :—

Industry.	Added Value of Product, 1928.	Industry.	Added Value of Product, 1928.
	£		£
Sawmills	943,860	Joinery	122,877
Railway and tramways workshops	697,458	Ironworks and foundries ..	119,424
Breweries and malting ..	408,537	Boots and shoes (making) ..	101,346
Newspaper production ..	324,758	Biscuits and cakes ..	105,039
Motor engineering, assembling and repairing	315,902	Aerated waters and cordials	99,887
		Dressmaking	92,087
Flourmills	311,899	Gas works	89,454
Fertilisers	302,306	Confectionery	70 246
Electric light and power ..	262,765	Tanneries	55,807
Printing	254.132	Butter and creameries ..	49,999
Engineering	251,872	Tobacco, cigars, and cigarettes	46,046
Furniture and cabinet-making	220,954	Bacon curing	36,322
Clothing (tailoring)	202,827	Jam, pickles, sauces, and vinegar	13,019
Meat works, etc.	158,131	Other*	1,629,377
Bakeries	137,898		
Lime, plaster, and cement ..	137.672		
Brickworks	128,222	Total	£7,690,123

*Including chiefly : Soap and candles, whale oil and olive oil, £69,836 ; tiles, pipes, and pottery, £92,507 ; glass bottles and other glassware, £51,228 ; agricultural implements, £97,952 ; tinsmithing (including plumbing), £55,925 ; ice and refrigerating, £86,323 ; clothing (slop), £66,881 ; underclothing and white work, £69,188 ; coach and waggon building, £60,966 ; motor body building and repairing, £54,751.

GOLD PRODUCTION.

—	Fine Ozs.	Value.	Dividends paid from Gold won.
		£	£
To end of 1890	42,016	178,474	1,250
Do. 1900	5,293,886	22,486,996	4,983,252
Do. 1914	28,278,145	120,117,926	24,702,069
Do. 1928	37,510,271	161,923,105	28,729,680

Gold was first produced in 1886, and the peak year was in 1903, when 2,064,801 fine ozs. were produced, valued at £8,770,719.

COAL PRODUCTION.

—	Tons.	Value.
		£
To end of 1900	176,254	82,547
Do. 1914	2,956,165	1,371,730
Do. 1928	8,763,722	5,770,848

Coal was first produced in 1898. The production for the year 1928 was 528,420 tons, valued at £420,145.

The total value of all minerals—including gold and coal—produced to the end of 1928, was £171,470,744.

ESTIMATED VALUE OF PRODUCTION.

(Values calculated principally on prices ruling in the Metropolitan Markets.)

Year.	Agricultural.	Pastoral.	Dairy, Poultry, and Bee-Farming.	Forestry and Fisheries.	Mining.	Manufacturing.	Total.
	£	£	£	£	£	£	£
1914 ..	3,097,140	2,057,735	560,766	1,569,422	5,533,990	2,676,419	15,495,472
1920 ..	8,732,984	4,504,150	1,032,507	1,850,270	3,259,411	3,721,639	23,100,961
1927 ..	13,034,025	7,190,770	1,800,024	2,664,531	2,348,913	6,618,473	33,656,736

In the case of Agricultural Production, seasons ended last day of February in the following year, and for Forestry, Fisheries and Manufacturing for 1927 year ended 30th June of following year.

IMPORTS AND EXPORTS.

Year.	Total Imports—Value.	Total Exports—Value.
	£	£
1829	50,284	*Nil*
1850	52,351	22,135
1870	213,259	200,985
1890	874,447	671,813
1900	5,962,178	6,852,054
1914-15 *	8,301,280	5,352,140
1927-28	18,287,633	18,240,775

* Changed from Calendar to Fiscal Year.

For the fiscal year, 1927-1928, the combined value of imports and exports exceeded £90 per head of the State's population.

NATURE OF EXPORTS.

—	Wool Exports.		Wheat Exports.		Fresh Fruit Exported.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Lbs.	£	Bushels.	£	Centals.	£
1829 ..	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*
1850 ..	309,640	15,482	*Nil*	*Nil*	*Nil*	*Nil*
1870 ..	1,787,812	89,390	*Nil*	*Nil*	*Nil*	*Nil*
1890 ..	6,969,380	261,352	*Nil*	*Nil*	*Nil*	*Nil*
1900 ..	9,094,743	270,718	1,074	181	*Nil*	*Nil*
1914-15* ..	24,004,807	817,630	7,286,118	1,343,856	33,851	46,417
1927-28 ..	61,244,631	4,962,916	26,193,707	6,994,528	115,436	191,915

* Changed from Calendar to Fiscal Year.

Wool was the State's first export, a small consignment being forwarded to London in 1832. In 1834, 7,585 lbs. were exported, valued at £758. Since then export has been continuous.

Wheat exportation did not commence seriously until 1909, when the quantity exported was worth £129,000.

The first year in which fruit was exported was 1903, the quantity being only 9 centals valued at £15.

Year.	Timber Exports.		Flour Exports.		Pearls.	Pearl Shell.	
	Loads.	Value.	Quantity.	Value.	Value.	Quantity.	Value.
		£	Tons.	£	£	Tons.	£
1829 ..	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*
1850 ..	210	1,048	*Nil*	*Nil*	*Nil*	*Nil*	*Nil*
1870 ..	3,144	17,551	*Nil*	*Nil*	50	74	551
1890 ..	23,444	82,052	*Nil*	*Nil*	40,000	1,237	86,293
1900 ..	114,508	458,461	43	400	20,000	737	86,513
1914-15 *	199,370	808,392	2,950	26,630	16,666	1,140	161,389
1927-28	207,686	1,265,321	85,398	1,008,168	20,064	953	166,065

* Changed from Calendar to Fiscal Year.

Timber was first exported in 1836.

The flour exports for 1914-15 were small in consequence of the drought experienced that year: the only drought in the history of wheat production in the State.

AMOUNT NECESSARY TO PURCHASE WHAT WOULD HAVE COST ON THE AVERAGE £1 IN 1911 IN THE AUSTRALIAN CAPITALS AS A WHOLE FOR FOOD, GROCERIES, AND HOUSE RENT (4 or 5 Rooms).

Year.	Perth. s.	d.
1901	20	6
1911	23	3
1914	23	6
1928	35	1

SHIPPING.

Year.	Inward.		Outward.	
	Ships. No.	Tons. No.	Ships. No.	Tons. No.
1829	18	5,209	18	5,209
1850	64	15,988	67	14,748
1870	127	65,716	131	67,730
1890	281	484,534	267	420,327
1900	769	1,625,696	747	1,606,332
1914-15 *	650	2,366,855	655	2,384,122
1927-28	792	3,795,310	812	3,806,078

* Changed from Calendar to Fiscal Year.

WORKERS' AND SOLDIERS' HOMES.

It has been estimated that one-half of the people in Australia live in homes owned by the head of the family. For the large percentage of working class owners in Western Australia, the Workers' Homes legislation passed by the Scaddan Labour administration in 1912, and the War Service Homes provided under the repatriation scheme of the Commonwealth Government, have been largely responsible. Under the Workers' Homes Act provision is made for the erection of houses on land held by the worker under either freehold or leasehold tenure. The Act is administered by the Workers' Home Board, and its operations are thus summarised :—

Date.	No. of Approvals.	Value.
(Under Freehold Conditions.)		
To June 30, 1914	1,169	£440,875
To February 28, 1929	2,799	£981,261
(Under Leasehold Conditions.)		
To June 30, 1914	223	£107,353
To February 28, 1929	547	£123,278
(Totals.)		
To February 28, 1929	3,346	£1,104,539

The average cost of these homes before the war was between £400 and £450, but it has since steadily increased, the average cost of homes erected in 1928 being about £700.

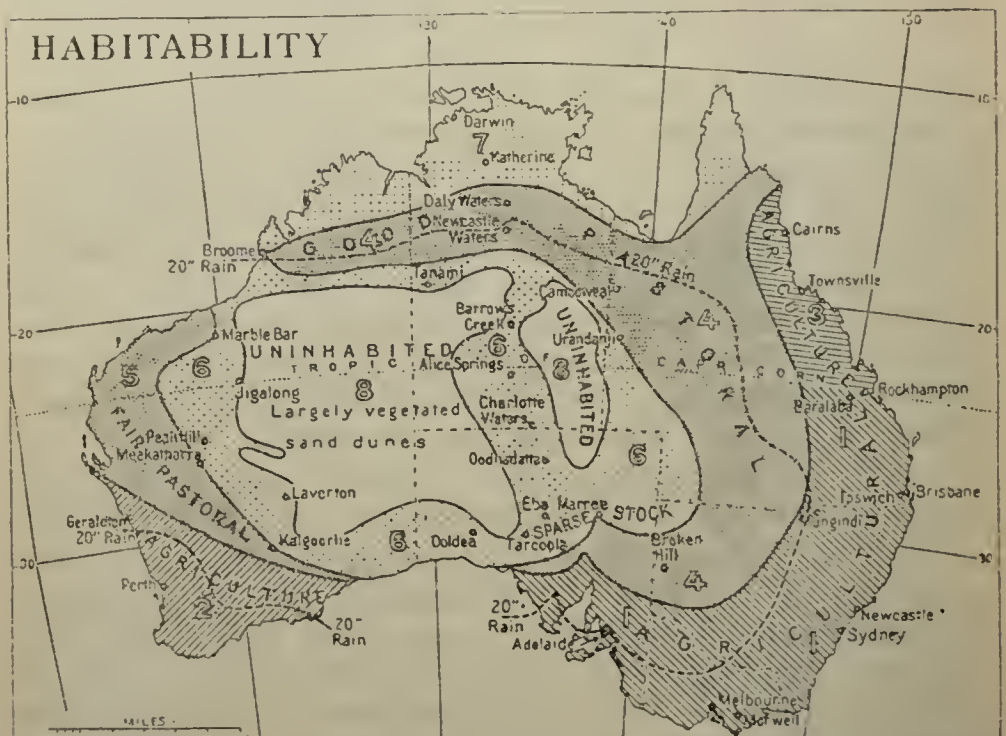
The War Service Homes legislation of the Commonwealth Parliament is administered by the State Workers' Homes Board. To the end of February, 1929, the approvals numbered 3,651, the value being £2,477,640, or an average cost of £680. Combined, the two services have provided nearly seven thousand homes at an average cost of just over £510.

XXXIX: 2029.

NOTHER hundred years! What manner of country will Western Australia be in 2029? Learned geographers have furnished exhaustive estimates of the resources of the Australian States, and their relative capacities to carry large populations. In these, pride of place is given to Queensland, with New South Wales second, and Western Australia third. Professor Griffith Taylor—the most conservative of all the authorities who have examined this question—describes as suitable for close population 616,000 square miles out of Australia's total area of 2,970,000 square miles, and of this favoured section almost one-fourth is in Western Australia. This State is also allotted nearly one-fifth of the good pastoral country, and almost one-third of the fair to poor pastoral country. On the other hand it contains some two-thirds of the unused territory. Whilst Professor Taylor seems to regard 50,000,000 as the limit of population that Australia can comfortably carry, other scientists place the total as high as 200,000,000.

There is, however, little disagreement as to the relative resources of the States, and assuming that the opinions are approximately reliable it seems not improbable that Western Australia will eventually contain one-sixth, or even one-fifth, of the total population of the Commonwealth. The most moderate estimation (Professor Taylor's) of the number of people that can be maintained in the temperate portion of Australia, without congestion, and on a high standard of comfort, is 20,000,000. Scientific discovery and mechanical invention may greatly add to this total. The filling up of the country within the temperate zone will push settlement further north, and lead to the establishment of a considerable population above the tropic of Capricorn. On the basis of relative natural resources, Western Australia should have between 3,000,000 and 4,000,000 people when the total population of Australia is 20,000,000.

When will that be? According to the statistician, long before this State has completed its second century. Factors, known and unknown, defy anything like exact prediction. Intensified congestion in the older countries, stimulated by the rapid increase in the average length of life, and qualified by falling birth rates; the ceasing of America to absorb large numbers of migrants; the extraordinary developments in methods of communication, operating to the advantage of large countries with sparse populations; all these are elements in the problem.



Professor Griffith Taylor's generalised habitability map of Australia. The numbers show approximate values of land in descending order from 1 to 8.

In the present condition of world affairs no country can have a greater asset than habitable territory, available for occupation. Australia has this in abundance, and particularly Western Australia. National security and material well-being alike suggest the need for reasonable expedition in the filling up of empty spaces; future happiness and true greatness demand a wise discrimination in the process.

The experiences of other countries point a warning finger. There is nowhere else in the world a huge island continent occupied exclusively by a homogeneous people, of the one colour, speaking the one tongue, and animated by like ideals. The preservation of this unique distinction may well be the prime consideration in all planning for enlargement.

Since the opening of the great war in 1914, the normal tide of migration from the British Isles to the outlying dominions has been stemmed. The position closely resembles that which obtained in 1829, an outline of which is furnished in the opening chapter of this book. It is in times of prosperity—not of adversity—that people migrate freely. The results of post-war efforts to stimulate the transfer of population from the crowded centre to the sparsely peopled outskirts of the Empire, suggest some doubts as to the efficacy of " schemes " as substitutes for the normal flow.

After the Napoleonic wars, recovery in Britain was slow : but it came, and with the return of prosperity, enterprising men and women sought in the colonies homes for themselves and wider opportunities for their children. The present stagnation in emigration from the old land will not continue indefinitely, and of all her dominions, Britain has none that holds out such attractions as does Australia. Canada—of similar area—was peopled by Britishers when Australia was less than a name on the map ; with Wolfe's victory on the Plains of Abraham it came completely under British rule, ten years before Captain Cook found his way into Botany Bay ; in the old days of the sailing ship it took three weeks to reach Canada from England, and three months to reach Australia ; to-day the traveller does the journey to Canada in a week and to Australia in a month ; and yet there are a million more British people in Australia than there are in Canada. South Africa was peopled by Britishers two hundred years before the colonisation of Australia began, and is only half the way from the old land, but there are six times as many Britishers in Australia as in South Africa, and three Britishers in Australia to every white person in the whole of Africa, from the Mediterranean to Table Bay.

Australia is a white man's country in which the conquest of Nature is comparatively easy. To read Rolvaag's "Giants in the Earth"—that saga of West American colonisation—is to realise how much kinder are conditions to the Australian people. A hundred years ago the "Parmelia" brought from the cradle of the British race men and women of English, Irish, Welsh, and Scottish birth. In a new land they have merged more closely with each

Professor Walter Von Geisler's habitability map of Australia. He places the total carrying capacity at 200,000,000, and the figures given indicate the maximum population per square mile in each area.

other than in the country of their origin. All have become Australians, and their pride as West Australians is complementary with an ardent loyalty to Australian nationhood. The end of another hundred years—no matter what vicissitudes of fortune may intervene—will find this State great and prosperous, the home of a happy and a united people, stimulated by high tradition, qualified by inherited character, and determined, in love and patriotism, to hand on to their successors the choicest fruits of liberty.

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